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## EXPLORING SENIOR-FRIENDLY MEDICATION PACKAGING DESIGN BASED ON VISUAL COMMUNICATION

LI Jun<sup>1,2</sup>, DUBRIVNA Antonina<sup>1</sup>

<sup>1</sup>Kyiv National University of Technologies and Design, Kyiv, Ukraine

<sup>2</sup>Shaanxi University of Science & Technology, Xi'an, People's Republic of China  
[realllljun@gmail.com](mailto:realllljun@gmail.com), [dubrivna.ap@knutd.com.ua](mailto:dubrivna.ap@knutd.com.ua)

*As global aging worsens, the elderly's need for medication is rising due to their unique physiological challenges, especially in visual perception. This paper focuses on improving medication packaging for the elderly by exploring typography, graphics, and color to enhance accessibility. It proposes three design methods: improving legibility with typography, using more concrete graphics, and adopting accessible color schemes. These approaches aim to help the elderly access medication information more easily, improving their experience and advancing senior-friendly packaging design.*

**Key words:** *Age-friendly design, Medication packaging design, Visual communication, Typography, Graphics, Color.*

### INTRODUCTION

With global birth rates falling and populations aging, the issue of population aging is becoming more serious, leading many countries into an aging society. This situation emphasizes the need to improve the quality of life for the elderly, particularly in designing medication packaging that considers their diminishing physical capabilities. Challenges include difficulties in recognizing graphic information, reading unclear text, and distinguishing colors in medication packaging. Current market designs often fail to meet the elderly's visual needs. This paper focuses on creating medication packaging designs that are visually accessible to the elderly, addressing these challenges.

### PURPOSE

This article explores the importance of visually communicative-friendly design in medication packaging tailored for the elderly and investigates its design methodology with the aim of advancing progress and development in senior-friendly medication packaging design. By conducting an in-depth analysis of the visual characteristics of the elderly, this paper proposes visually communicative-friendly design methods to enhance the medication usage experience for older individuals.

### RESULTS AND DISCUSSION

The aging population has emerged as one of the most critical and nearly irreversible social trends globally, bringing forth new focal points and research directions across various fields. Countries like the United Kingdom, Germany, and Japan, among others, have been earlier impacted by the socio-economic



repercussions of population aging, prompting earlier research initiation into age-friendly-related issues. Closely associated with aging is the medical field, social welfare, and service industries. Many medically advanced nations have exhibited a higher degree of age-friendliness in their medication packaging design. For instance, Japan has established the Barrier-Free Packaging Standard (JLSS0021) (Fig.1), encompassing guidelines and container designs tailored to diverse demographics including the elderly and disabled individuals [1]. These standards address the daily life challenges faced by vulnerable groups, thus enhancing the convenience for the elderly population in society.

However, current research on aging largely focuses on household items, community residences, medical supplies, and public spaces. Moreover, much of this research remains largely theoretical and lacks practical solutions to the corresponding issues. While product design and environmental design for aging are relatively well-developed, age-friendly design for medication packaging remains relatively weak. In terms of age-friendly packaging design, most medication packaging on the market fails to reflect the specific design characteristics that cater to the needs of the elderly. There are few designs that genuinely address the psychological aspects of medication use among the elderly or align with their medication habits. Additionally, the appearance of most medication packaging is not suitable for easy recognition by the elderly, resulting in difficulty for them to access information.

JIS 50021-2000	包括老年人和残疾人在内的所有人群的可读性、包装和容器 — 包装-容器	Guidelines for all people including elderly and people with disabilities — Packaging and receptacles
JIS 50022-2001	包括老年人和残疾人在内的所有人群的可读性、包装和容器。打开的方法 — 包装-容器 — 测试性识别方法	Guidelines for all people including elderly and people with disabilities — Packaging and receptacles — Test methods for opening
JIS 50023-3-2007	老年人和残疾人用药物。包装和容器。识别指示 — 包装-容器 — 视觉性识别方法	Guidelines for older persons and persons with disabilities — Packaging and receptacles — Tactile indication for identification
JIS 50023-4-2007	老年人和残疾人用药物。包装和容器。使用者的评估方法 — 包装-容器 — 使用性评估方法	Guidelines for older persons and persons with disabilities — Packaging and receptacles — Evaluation method by user
JIS 50025-2004	包括老年人和残疾人在内的所有人群。包装和容器。危险解除警告。要求 — 包装-容器 — 危险解除警告表示 — 要求	Guidelines for all people including elderly and people with disabilities — Packaging and receptacles — Tactile warnings of danger — Requirements

**Fig. 1.** Japanese Packaging Container Standards for Elderly and Disabled Individuals, 2000-2007.

As individuals age, physiological functions in the elderly gradually weaken, particularly evident in diminished visual acuity and visual degradation. Overall, the visual characteristics of the elderly can be summarized into three aspects: visual Acuity Decline: As individuals age, the muscles of the eyes gradually deteriorate, resulting in difficulty in seeing small objects nearby. Elderly individuals may require magnifying glasses to aid their vision, experience diminished adjustment capabilities, and encounter occurrences of blurred vision and dryness of the eyes. Additionally, elderly individuals may experience a reduced ability to recognize object contours and a deterioration in spatial perception, leading to misjudgments regarding the location and distance of objects [2].

Decline in Visual Color Perception: As individuals age, the visual system gradually diminishes in its ability to perceive variations in color brightness. This can result in a decreased ability to discern complex colors and a reduced recognition of



characteristics such as color brightness, saturation, and lightness. Consequently, elderly individuals may encounter difficulties in color selection and identification.

**Visual Function Degradation:** As the visual function of elderly individuals deteriorates, their responsiveness to visual stimuli is also affected, often leading to fatigue. They may experience difficulty in prolonged reading or viewing of text, resulting in symptoms of fatigue [3]. Consequently, elderly individuals may struggle to engage in high-intensity reading activities and may find it challenging to adapt to and process rapidly changing information, leading to inconvenience in daily life.

These three characteristics result in a decreased ability of elderly individuals to capture, process, and filter external information. When designing medication packaging suitable for the elderly, it is essential to ensure that the design allows elderly individuals to obtain accurate information based on their visual capabilities.

Designing medication packaging for the elderly from the perspective of visual communication friendliness aims to provide more assistance and support to the elderly population in their daily lives. Visual communication design primarily involves the use of graphics and text, incorporating a variety of elements such as color, graphics, and text. From the standpoint of visual communication design, optimizing and upgrading medication packaging for the elderly based on elements such as typography, color, and structure is essential. The development of a visual design language tailored to the needs of the elderly is a current challenge. This is evident in several aspects, including:

**Enhancing Legibility through Typography:** Text serves as the most direct symbolic representation of medication usage instructions, making typography design crucial for enhancing legibility. In the context of medication packaging design for the elderly, who often face challenges such as declining vision, clear and readable text is essential for their proper medication use. First and foremost, it is imperative to fully consider the visual needs of the elderly when designing medication packaging. Important information such as medication names, usage instructions, and contraindications should preferably be presented in concise large fonts rather than normal-sized fonts. Alternatively, key information should be highlighted to avoid using overly ornate fonts that may increase the difficulty of reading (Fig2-a). In addition to font size, the placement of text is also crucial. Text should be positioned where elderly individuals can easily see and access it, facilitating convenient reference. Furthermore, by carefully combining elements such as text structure and arrangement, ensure that the layout of text on the packaging is clear and orderly, avoiding cluttered and disorganized layouts. Such design considerations enhance the elderly's ability to identify and comprehend text, effectively achieving the goal of disseminating information.

**Rendering Graphics More Concrete:** Graphics are inherently easier to comprehend compared to other visual elements, as they intuitively convey information to the brain. Given that elderly individuals often have lower receptivity to novel stimuli, the graphic design of medication packaging should aim to convey information in a straightforward manner, enabling elderly individuals to grasp it at a



glance and facilitating memorization. As visual recognition abilities decline with age and elderly individuals tend to exhibit a certain inertia in their daily lives, preferring simplicity over complexity, simplified and concrete graphics are more easily accepted and identified by the elderly. Graphics should be simplified to their most basic forms, avoiding overly intricate details and patterns to reduce cognitive burden on the elderly. Additionally, the meaning of graphics should be unambiguous, avoiding ambiguity or confusion, and efforts should be made to enhance the recognizability of graphics in design. Furthermore, when designing medication packaging for the elderly, it is essential to utilize principles of form aesthetics to abstract geometric graphics, thereby deepening the user's acceptance of information. Employing easily understandable symbols and symbols to represent the attributes, efficacy, or usage methods of medications, and ensuring that graphics align with the daily experiences and common sense of the elderly population is crucial (Fig2-b).

**Color Design Emphasizes Affability:** The expressive power of color itself is highly intuitive and possesses a strong capability to convey information. When designing medication packaging for the elderly, enhancing color attributes can facilitate easier understanding among elderly individuals. It is essential to take into account the preferences of this demographic regarding colors and utilize principles of color psychology and related color-matching knowledge to alleviate the medication burden on the elderly. As individuals age, elderly people become more sensitive to vivid colors, hence it is advisable to opt for soft, serene hues and modest, clean tones to enhance trust and affinity towards medications among the elderly. For instance, yellow evokes warmth, instilling a sense of comfort in elderly individuals, while blue conveys stability, aligning with their psychological state (Fig2-c). Furthermore, considering the gradual decline in visual function among the elderly, it is preferable to employ colors with strong contrast and moderate brightness in packaging design. This ensures elderly individuals can clearly differentiate between colors and information and quickly locate the products they need amidst various options. Additionally, color designs emphasizing affability should also consider the cultural backgrounds and personal preferences of the elderly. Different cultures have varying interpretations of colors; thus, medication packaging designs should select and utilize colors based on the cultural backgrounds and preferences of the target audience to ensure resonance and a sense of belonging.



**Fig. 2.** Examples of Visual Communication-Friendly Designs: a- Medication Packaging with Clear Typography; b- Medication Packaging with Concrete Graphics; c- Medication Packaging with Comfortable Colors.



## CONCLUSIONS

As an integral part of vulnerable demographics, the elderly, characterized by declining vision and slower cognitive processes, warrant additional standards and requirements when designing medication packaging for them. In the context of medication packaging design for the elderly, this paper suggests the scientific utilization of three elements in visual communication – graphics, text, and color – to achieve age-friendly design. It summarizes the visually communicative-friendly design methods for age-friendly medication design as follows: enhancing text legibility, rendering graphics more concrete, and prioritizing affable colors. Medication packaging design should accurately convey medication information to the elderly, guiding their active participation in treatment, thereby improving their quality of life and reflecting a sense of humanistic care.

## REFERENCES

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**ЛІ Дж., ДУБРІВНА А.**

## **ВИВЧЕННЯ ЗРУЧНОГО ДИЗАЙНУ УПАКОВКИ ЛІКІВ ДЛЯ ЛЮДЕЙ ПОХИЛОГО ВІКУ НА ОСНОВІ ВІЗУАЛЬНОЇ КОМУНІКАЦІЇ**

*Тенденція глобального старіння стимулює попит на ліки серед людей похилого віку. Будучи унікальною демографічною групою, люди похилого віку стикаються з фізіологічними викликами, зокрема у візуальному сприйнятті, тому їх вимоги до упаковки ліків відрізняються від загальної популяції. Метою цієї роботи є вивчення візуально комунікативних аспектів упаковки ліків, зокрема шрифтів, графіки та кольору. Через аналіз фізіологічних характеристик людей похилого віку, пропонуються три методи дизайну, спрямовані на покращення візуальної комунікації: покращення читабельності за допомогою шрифтів, уточнення графіки та використання колірних схем, що сприяють доступності. Ці методи спрямовані на допомогу людям похилого віку у швидкому доступі до інформації про ліки, покращенні їх використання та сприянні прогресу та розвитку у дизайні упаковки ліків, зорієнтованому на людей похилого віку.*

**Ключові слова:** Дружній дизайн, Дизайн упаковки ліків, Візуальна комунікація, типографіка, графіка, колір.