

THE LEVEL OF MEDICATION COMPLIANCE, SELF-EFFICACY, AND HEALTH LITERACY OF ELDERLY PATIENTS WITH DIABETES MELLITUS

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ABSTRACT

In this descriptive-correlational study, we investigated medication adherence, self-efficacy, and health literacy levels among elderly patients diagnosed with diabetes mellitus and evaluated the relationships among these variables. A structured survey was conducted to gather information from the older adults included in our study, including their demographics (i.e., age 60-70 years; gender was equally represented; secondary education; low to middle income; strong family support systems; most are married or living with family). Most of the older adults had been diagnosed with diabetes mellitus for 5-10 years, and had been primarily treated with oral hypoglycemic medications. All study participants, when asked about their medication adherence, self-efficacy, and health literacy, reported high levels of adherence (Mean = 3.04), self-efficacy (M = 3.08), and health literacy (M = 3.26), with the highest scores in health literacy. Although participants had a high degree of knowledge regarding medication adherence and were very confident in performing basic self-care tasks, such as checking their blood glucose and adjusting their diet, we observed that there were many occasions when they were inconsistent with medication adherence, particularly when traveling or when experiencing no symptoms of diabetes; furthermore, they expressed difficulty managing their emotions and managing their diabetes independently. Using correlation analysis, we found a moderate positive relationship between medication adherence and health literacy ($r = .46$), a weaker but positive relationship between medication adherence and self-efficacy ($r = .27$), and a moderate positive relationship between self-efficacy and health literacy ($r = .50$), thus indicating that health literacy is an important predictor of both adherence and confidence. Due to these findings, the researchers proposed a comprehensive action plan to enhance medication adherence, improve emotional coping, sustain health literacy, 4) encourage independent self-management, strengthen family support, and enhance patient-provider communication and continuous monitoring of patients. Overall, this study highlights how knowledge, confidence, and behavior work together to support diabetes management and reinforces the need for education-based, patient- and family-centered support to improve health outcomes for elderly patients with diabetes mellitus.

Keywords: *Medication compliance, self-efficacy, health literacy, diabetes mellitus, family-centered supports*

INTRODUCTION

Diabetes Mellitus (DM) continues to be one of the most pressing global health issues, particularly among the elderly population. With over 537 million adults worldwide living with diabetes as of 2021, the burden of this chronic disease is expected to rise significantly, especially in aging populations (International Diabetes Federation [IDF], 2021). Among the most vulnerable are elderly individuals, who not only face increased physiological challenges

due to aging but are also more susceptible to diabetes-related complications such as cardiovascular disease, kidney failure, and neuropathy (Bailey et al., 2021). In the context of these growing global concerns, the management of diabetes among older adults has become a critical focus of public health systems worldwide.

China, in particular, faces a disproportionately high burden of diabetes, with over 140 million adults diagnosed as of 2021, making it the country with the largest diabetic population globally (Wang et al., 2021). Among Chinese adults aged 60 and above, the prevalence exceeds 30%, posing a significant challenge to the country's healthcare infrastructure (Li et al., 2022). Rapid urbanization, lifestyle changes, and dietary transitions have contributed to this epidemic, and yet the healthcare response has struggled to keep pace with the growing need for patient education and chronic disease self-management support. Rural areas, in particular, face a shortage of trained professionals and accessible health services, leading to disparities in diabetes care and outcomes among older adults (Tang et al., 2023).

Internationally, medication compliance remains a major concern in chronic disease management. Studies indicate that nearly 50% of patients with chronic illnesses fail to take medications as prescribed, and the rates are even higher among elderly individuals due to polypharmacy, memory impairment, lack of support, and financial barriers (Al Shamsi et al., 2020; Sørensen et al., 2021). Beyond medication adherence, patients' self-efficacy, their belief in their ability to manage their disease, plays a crucial role in long-term health outcomes. Elderly patients with low self-efficacy are less likely to engage in positive health behaviors, monitor blood glucose levels, or adjust dietary and physical activity routines effectively.

Another critical factor influencing diabetes outcomes is health literacy, defined as the degree to which individuals can obtain, process, and understand basic health information to make appropriate health decisions (Nutbeam, 2020). Health literacy is a foundational skill that intersects with both medication compliance and self-efficacy. Inadequate health literacy is particularly prevalent among elderly adults and is associated with poor disease knowledge, increased hospitalizations, and reduced engagement with healthcare providers (Sørensen et al., 2021). In China, limited educational attainment among older generations and language or dialect barriers further impede health communication and comprehension (Li et al., 2022).

Despite the recognition of these interconnected issues, there remains a lack of comprehensive studies in the Chinese context that simultaneously examine medication compliance, self-efficacy, and health literacy among elderly diabetic patients. Most existing studies isolate these variables or focus primarily on younger demographics, thereby overlooking the nuanced challenges faced by older adults. Understanding the relationships among these factors is crucial for designing effective, culturally sensitive, age-appropriate, and sustainable interventions in both rural and urban settings.

The objectives of this study are fourfold (1) To determine the level of medication compliance among elderly patients with diabetes mellitus, (2) To assess the self-efficacy of these patients in managing their condition, (3) To evaluate their level of health literacy, (4) To explore the relationships among medication compliance, self-efficacy, and health literacy. By addressing these objectives, the study aims to fill critical gaps in the literature and inform clinical practices and public health policies that support elderly diabetic patients more holistically.

The contribution of this research is twofold. First, it provided updated data specific to the Chinese elderly population, enabling comparison with international trends to inform more contextually relevant care models. Second, it supported the development of multi-dimensional interventions that address behavioral, cognitive, and educational barriers to diabetes management.

The motivation for conducting this research stems from the researcher's experience in geriatric clinical nursing, where elderly patients with diabetes often present with preventable complications resulting from poor medication adherence, lack of confidence in managing their illness, and confusion about treatment instructions. Witnessing these patterns firsthand highlighted the urgent need for evidence-based strategies to empower older adults to become active participants in their care. This study is not only an academic endeavor but also a practical step toward improving patient outcomes through better understanding and informed action.

Statement of the Problem

This study sought to explore medication adherence, self-efficacy, and health literacy among elderly patients with diabetes mellitus. Additionally, it aimed to determine whether significant relationships exist among these variables and how demographic factors may influence them.

1. What is the demographic profile of the respondents in terms of:
 - a. Age
 - b. Sex
 - c. Educational attainment
 - d. Monthly income
 - e. Civil status
 - f. Duration of diabetes diagnosis
 - g. Type of diabetes medication (oral hypoglycemics, insulin, or both)
 - h. Living arrangement (alone, with family, or in assisted care)
2. What is the level of the following among elderly diabetic patients?
 - a. Medication Compliance
 - b. Self-Efficacy
 - c. Health Literacy
3. Is there a significant relationship in the level of Medication Compliance when grouped according to their demographic profile?
4. Based on the findings of the study, what action plan can be proposed?

Scope and Delimitations

The current study was a descriptive-correlational research project designed to assess medication adherence, self-efficacy, and health literacy among older adults with diabetes mellitus. It examined the demographic profile (age, sex, education level, monthly income, marital status, duration of diabetes, type of treatment, and living arrangements) of study participants and how these demographics relate to their ability to self-manage their diabetes. In addition, the study examined how well older adults adhere to their medications, their confidence in their ability to manage their diabetes, and their understanding of the information provided to them about their diabetes. The researchers used survey instruments with structured questions to collect information and weighted mean analysis to describe values on the continuous data. In order to determine the relationship between the three outcomes of interest: medication adherence, self-efficacy, and health literacy, the researchers used Pearson correlation.

The study was limited to older adults with diabetes mellitus in the delineated geographic area; thus, the study results cannot be generalized beyond that population, to younger individuals, or to individuals with other chronic illnesses. Also, the descriptive-correlational design of the study allows only the presentation of descriptive data on interrelationships, not causal inferences about the variables of interest. Historically, diabetic patients' responses in this study were based solely on self-report, which may introduce recall or social desirability bias. Further, only three variables, medication adherence, self-efficacy, and health literacy, were utilized as the basis for this research study; other potentially impactful variables (e.g., quality of the medical care delivery system, cultural views, or co-morbid illnesses) were not assessed. An action plan was developed based on the results of the study that outlines patient-focused, family-supported, and education-based interventions to improve patients' ability to self-manage their diabetes; however, the proposed action plan was not tested or implemented in this study and thus requires further validation for efficacy within upcoming studies.

Review of Related Literatures

Effective management of diabetes mellitus, particularly among elderly patients, depends heavily on consistent medication adherence. Recent studies have emphasized that medication compliance is influenced by several factors, including regimen complexity, cognitive capacity, socioeconomic challenges, and patient beliefs about treatment. For instance, Lee and Chu (2025) observed that health literacy significantly moderated the impact of diabetes self-management education on medication adherence. Patients with higher levels of health literacy were more likely to follow their prescribed regimens. McCaffery et al. (2025) confirmed that limited health literacy among older adults was a major predictor of poor adherence, particularly among those managing multiple medications. Furthermore, Lee et al. (2021) found that individuals with higher health literacy exhibited improved self-management behaviors, including medication-taking routines, suggesting a direct relationship between literacy and adherence. The World Health Organization has also acknowledged that complex medication instructions, polypharmacy, and lack of understanding are key barriers to long-term compliance in chronic disease management.

Alongside adherence, self-efficacy, the belief in one's capacity to manage and control health behaviors, has emerged as a pivotal psychological factor in chronic disease control. Research has consistently shown that higher self-efficacy is associated with better glycemic control, improved lifestyle adherence, and proactive healthcare behavior. Reamrimmadun et al. (2022) developed a causal model demonstrating that self-efficacy significantly affects blood glucose regulation in elderly patients by influencing self-care behaviors. Saleh et al. (2021) also found that self-efficacy was positively associated with health literacy and self-care practices, ultimately improving HbA1c outcomes. In a scoping review, van der Gaag et al. (2022) further emphasized the critical role of self-efficacy in managing chronic illness, citing it as one of the strongest psychological predictors of successful disease management. Interventions such as digital platforms, mobile applications, and web-based education programs have also shown promise in increasing self-efficacy among older adults, leading to improved health behaviors and medication adherence.

Health literacy, defined as an individual's capacity to understand and use health information, has increasingly been linked to patient outcomes in chronic disease care. Recent findings suggest that elderly patients with low health literacy are more likely to misunderstand treatment plans, misinterpret dosage instructions, and delay seeking care. Wu et al. (2022) found that digital health literacy played a vital role in chronic disease self-management among older

adults, especially when paired with social support. McCaffery et al. (2025) corroborated these findings, identifying health literacy as a consistent predictor of medication adherence and disease knowledge. Lee et al. (2021) demonstrated that health literacy not only influences adherence but also supports the development of self-efficacy, thereby serving as a foundational skill for effective diabetes management. Consistently, low literacy has been associated with diminished treatment engagement, increased hospitalization rates, and higher healthcare costs.

Importantly, recent literature reveals that these three variables, medication compliance, self-efficacy, and health literacy, are not isolated but rather interdependent components of chronic disease self-management. Multiple studies have identified pathways linking these constructs. For example, Lee et al. (2021) reported that health literacy directly and indirectly influenced self-management through self-efficacy. Reamrimmadun et al. (2022) found that both health literacy and self-efficacy predicted self-care behaviors, which, in turn, affected glycemic control in elderly diabetic patients. Similarly, Saleh et al. (2021) found strong interrelations among the three constructs, with higher literacy and self-efficacy associated with better adherence and health outcomes. Additionally, Lee and Chu (2025) showed that patients with both adequate literacy and high self-efficacy gained more from educational interventions, highlighting the value of integrated approaches. Wu et al. (2022) supported the importance of digital literacy and self-efficacy as predictors of improved self-management in elderly patients, reinforcing the potential of technology-assisted care.

In summary, the literature underscores the dynamic interplay among medication adherence, self-efficacy, and health literacy. These constructs jointly influence how elderly patients manage diabetes and respond to long-term treatment regimens. Although these relationships have been explored individually in many studies, there remains a lack of research examining their combined effects, particularly in aging populations. This reinforces the need for holistic and culturally contextualized studies that evaluate these factors simultaneously, which this research aims to address.

Maintaining medication adherence among older adults with diabetes is essential for preventing complications, preserving cognitive function, and reducing healthcare burdens. Recent evidence indicates that adherence rates vary, yet remain suboptimal. In South Korea, a home-health-care-based study reported an average medication possession ratio of 88.5%, with only 64.6% classified as adherent. Key predictors of poor adherence included cognitive impairment, costs, polypharmacy, and limited access to certified nursing support ([MDPI+8PMC+8PubMed+8PubMed](#)). Meanwhile, an exploratory analysis in the U.S. linked adherence disparities to social determinants such as disability status, food security, and interview language, with 73.9% medication adherence observed in older adults, but poorer in those facing social disadvantage ([ScienceDirect](#)).

The psychological construct of self-efficacy, one's belief in the ability to manage health behaviors, has emerged as a strong determinant of diabetes self-management. In a Syrian cohort, self-efficacy negatively correlated with age and emotional distress, yet remained relatively high and associated with active engagement in diabetes care ([BioMed Central](#)). A Chinese community-based study examined self-management ability and patient activation, and found that self-efficacy mediated nearly half the effect of activation on self-care behavior in elderly patients with type 2 diabetes ([PMC+3PubMed+3PubMed+3](#)). Education programs targeting primary care professionals also yielded significant improvements: an advanced-

practice training increased clinicians' self-efficacy and was associated with improved patient metabolic outcomes, including HbA1c and eGFR levels ([PMC+1MDPI+1](#)).

Health literacy, the ability to understand and use health information, underpins both self-efficacy and medication adherence. In Thailand, a cross-sectional study involving 414 older adults showed strong positive correlations among health literacy, self-efficacy ($r = 0.78$), and self-care behaviors ($r = 0.76$), and significant inverse associations with HbA1c (Beta = -0.52) and fasting blood sugar ([PubMed](#)). Similarly, in South Korea, health literacy was positively linked with self-efficacy ($rs = 0.64$) and self-management ($rs = 0.44$), and negatively associated with HbA1c levels ($rs = -.42$) ([PMC](#)). A recent systematic review focusing on ethnic minority adults with type 2 diabetes reported inconsistent evidence regarding the link between health literacy and medication adherence, underscoring the need for well-designed studies in diverse populations ([BioMed Central](#)).

Here, numerous studies illustrate the interrelationship among these variables. In the Thai cohort, health literacy, self-efficacy, and self-care behaviors collectively explained substantial variance in glycemic outcomes, highlighting their joint influence on diabetes control ([PubMed](#)). The South Korean study demonstrated strong associations among literacy, self-efficacy, and self-management, as well as meaningful associations with HbA1c levels ([PMC](#)). Models of mediation, like the one in China, confirm that self-efficacy serves as a critical bridge between patient activation and actual management practices ([PubMed](#)). Meanwhile, education for healthcare providers enhanced self-efficacy, which translated into better patient adherence and metabolic profiles ([PMC](#)).

In terms of supportive technologies and interventions, qualitative and design studies identify user preferences for medication reminder systems such as voice assistants and mobile apps tailored to older adults. These support tools focus on personalization, multi-channel reminders, and integration of medication intake confirmation, potentially boosting adherence and self-efficacy. Additionally, exploratory models using predictive analytics demonstrated that machine-learning-based adherence tools could effectively forecast non-adherence, providing opportunities to intervene early in high-risk patients.

Finally, literature on polypharmacy highlights the challenge of pill burden in elderly diabetic patients: high daily medication counts are associated with non-adherence, increased risks of drug interactions, hospitalizations, and patient dissatisfaction.

Across the reviewed studies, consistent themes emerge: low health literacy undermines self-efficacy; low self-efficacy impairs self-care behavior; and both factors combine to reduce medication compliance. While numerous models and interventions highlight these links, few simultaneously focus on all three constructs in elderly diabetic cohorts. Digital health solutions, tailored education, and supportive clinical training appear promising, yet require localized validation. This synthesis underscores the rationale for a comprehensive study that empirically investigates the interconnections among health literacy, self-efficacy, and medication adherence in elderly populations with diabetes.

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tailored education, and supportive clinical training appear promising, yet require localized validation. This synthesis underscores the rationale for a comprehensive study that empirically examines the interconnections among health literacy, self-efficacy, and medication adherence in older adults with diabetes.

Theoretical Framework

Dorothea Orem's Self-Care Deficit Nursing Theory (SCDNT) is highly relevant to this study, which examines medication adherence, self-efficacy, and health literacy among older adults with diabetes mellitus. Orem's theory focuses on individuals' ability to care for themselves and posits that nursing is required when individuals are unable to meet their own self-care needs due to health-related limitations (Orem, 2001).

In this theory, self-care was defined as the practice of activities that individuals initiate and perform for themselves to maintain life, health, and well-being.

The theory is built on three interrelated concepts:

1. Self-Care – the actions individuals take to maintain health.
2. Self-Care Deficit – the gap between an individual's care needs and their ability to meet those needs.
3. Nursing Systems – interventions designed to meet the patient's needs when a deficit is present.

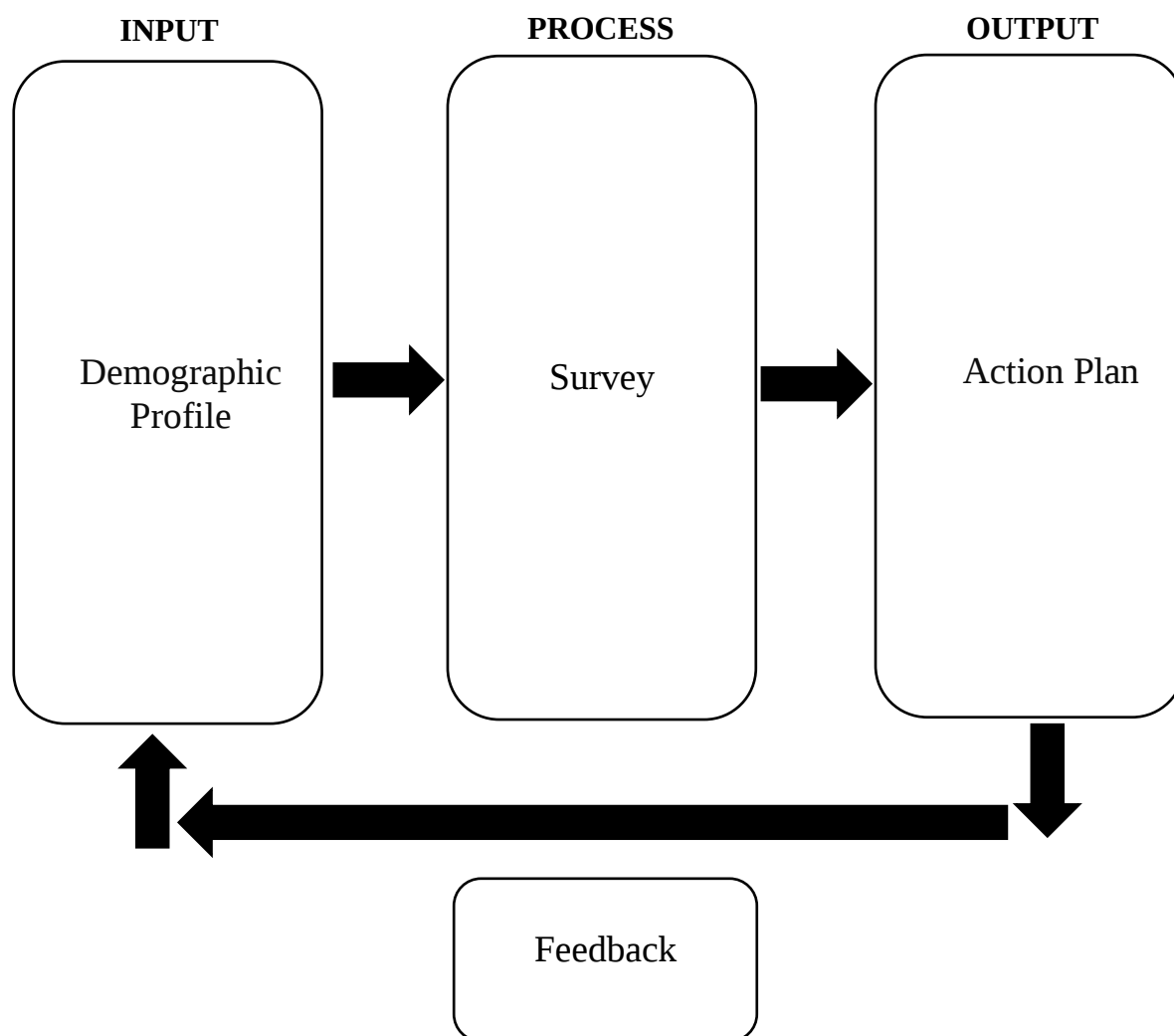
This theoretical lens aligns strongly with the variables under investigation in this study:

- Medication Compliance is a form of therapeutic self-care behavior that is often compromised in elderly patients due to polypharmacy, forgetfulness, or lack of understanding, falling under the scope of a potential self-care deficit.
- Self-Efficacy closely relates to Orem's concept of self-care agency, which refers to the individual's ability to engage in self-care. High self-efficacy enhances one's motivation and confidence in managing chronic illnesses like diabetes.
- Health Literacy is crucial for developing and maintaining self-care abilities. Orem acknowledges that knowledge and decision-making capacity are foundational to self-care, making literacy a core component of her model.

The elderly, especially those with chronic conditions like diabetes, often experience physical, cognitive, or educational limitations that create self-care deficits. According to Orem, nursing interventions are necessary when individuals cannot meet their self-care needs. Thus, this study seeks to identify not only the presence of self-care deficits (e.g., low compliance, poor literacy, or reduced confidence) but also how healthcare providers, particularly nurses, can intervene to support, educate, and empower these patients.

By assessing the levels of medication compliance, self-efficacy, and health literacy, the study ultimately contributes to developing more effective nursing systems (supportive-educative) as proposed in Orem's theory. These systems aim to guide elderly patients toward more autonomous and effective diabetes management.

Conceptual Framework



The **Input** included the demographic profile of elderly diabetic patients (age, sex, education, income, and civil status), duration of diagnosis, treatment type, and living arrangement, as well as their medication adherence, self-efficacy, and health literacy levels.

The **Process** involved data collection using validated questionnaires, statistical analysis to determine variable levels and relationships, and ethical considerations such as informed consent and data confidentiality.

The **Output** included a detailed demographic profile, identified levels of compliance, self-efficacy, and literacy, significant correlations among the variables, and a proposed action plan to enhance diabetes management in the elderly population.

METHODOLOGY

Research Design

This study employed a descriptive-correlational research design to examine medication adherence, self-efficacy, and health literacy among elderly patients with diabetes mellitus. The descriptive component provided a detailed overview of the participants' demographic

characteristics, including age, sex, educational attainment, monthly income, civil status, duration of diabetes diagnosis, type of medication, and living arrangements. This foundational information is essential in understanding the context in which elderly patients manage their diabetes.

Consistent with Creswell's (2023) definition of Quantitative Descriptive Correlational Research, this study also examined the relationships among medication compliance, self-efficacy, and health literacy, as well as the influence of demographic factors on these variables. Data were collected using validated, structured questionnaires to assess each of the three main variables. The correlational analysis determined whether significant relationships exist between these factors, which are critical for effective diabetes self-management.

This research design provided a comprehensive view of how elderly diabetic patients engage with their treatment and of the factors that may influence or hinder their adherence and self-care behaviors. Ultimately, the findings can guide the development of targeted interventions to improve patient outcomes and promote more effective chronic disease management in the aging population.

Participants/Respondents

This research was conducted in selected community healthcare settings and local health centers in China, focusing on elderly patients diagnosed with diabetes mellitus. These facilities provide primary care, health education, and chronic disease management services to local residents and are integral to China's community-based health system. The study population consisted of elderly diabetic patients residing in the community and receiving regular follow-up care at these centers.

Using the Raosoft sample size calculator, based on a population of approximately 300 elderly diabetic patients registered in the selected communities, the required sample size is 169 respondents, with 95% confidence and a 5% margin of error.

For this study, the inclusion criteria are as follows:

Participants were aged 60 years and above and had a confirmed medical diagnosis of diabetes mellitus (Type 1 or Type 2) for at least six months. They must be cognitively and physically capable of answering survey questions independently or with minimal assistance. Respondents must be actively managing their diabetes through medication, diet, or self-care, and must be receiving care through community health centers in China. Individuals who can understand and respond to written or verbal instructions in Mandarin or the local dialect were included to ensure comprehension of survey tools.

The exclusion criteria included elderly patients with severe cognitive impairment, such as advanced dementia or Alzheimer's disease, who may prevent meaningful participation in the study. Those who are hospitalized, terminally ill, or currently under institutionalized care were excluded, as their circumstances may differ significantly from those living independently or semi-independently in the community. Additionally, patients who have been diagnosed with diabetes for less than six months or are not on any form of diabetes medication were also excluded, as the study focuses on those with ongoing self-management routines.

Ethical Consideration

Ethical considerations are essential to conducting responsible research, guiding researchers in their quest for knowledge while upholding human dignity and fostering trust. Ethics establishes

a framework of principles that encourage desirable behaviors and ensure fairness, integrity, and safety throughout the research process. These ethical principles, autonomy, beneficence, veracity, justice, confidentiality, non-maleficence, data privacy, and informed consent, ensure respondents' rights and well-being at each stage of the study.

To uphold the principle of autonomy, researchers provided each respondent with a comprehensive consent form that clearly outlined the study's purpose, procedures, potential risks, and benefits. This transparency allows respondents to make informed decisions about their involvement, empowering them to choose freely whether to participate or withdraw without negative consequences. Respecting autonomy ensures that respondents' rights to self-determination are honored throughout the research process.

The principle of beneficence guided researchers to prioritize the well-being of respondents and the community. Researchers ensured that their methods are designed to maximize positive outcomes and minimize potential harm. The findings of this study were intended to benefit the community, advance knowledge or practice, and provide insights that support the welfare of those affected by the research.

Veracity or truthfulness is a cornerstone of ethical research. Researchers are committed to honesty and transparency in reporting their findings, presenting results that are accurate and free from fabrication or bias. This dedication to truth ensures the reliability of the study's outcomes, fostering trust in the research process and enabling others to make informed decisions based on valid information.

In adhering to the principle of justice, researchers ensured fairness and equity in the selection of respondents, in the treatment, and in the benefits. Every respondent was treated equally and respectfully, with no favoritism or discrimination. This ethical commitment ensures that the burdens and benefits of the research are distributed fairly, promoting inclusivity and preventing any exploitation of vulnerable groups.

Maintaining confidentiality is essential to building trust between researchers and respondents. Personal information provided by respondents was protected and not disclosed to unauthorized individuals or entities. Data were anonymized when necessary, and secure storage methods were used to safeguard respondents' privacy, ensuring their information remains confidential throughout and beyond the study.

The principle of non-maleficence, or "do no harm," guided researchers to minimize any potential risks or discomfort to respondents. Careful consideration was given to study design and methodology to prevent harm. Any foreseeable risks were communicated to respondents in a transparent manner, and measures were implemented to protect their safety and welfare during and after their involvement in the study.

Data privacy was strictly maintained to comply with legal and ethical standards. All personal and sensitive data were securely stored and handled, preventing unauthorized access or disclosure. Adhering to data protection regulations, researchers implemented safeguards to ensure that respondents' information remains private, reinforcing trust and respect for their rights.

Informed consent is fundamental to ethical research practices. Researchers ensured that respondents were fully informed about the study's purpose, procedures, risks, and benefits before they agreed to participate. By obtaining informed consent, researchers confirm that respondents have voluntarily chosen to participate in the study and have a clear understanding of their involvement and the freedom to withdraw at any time.

Research Instrument

The research instrument used in this study is a structured questionnaire designed to assess medication adherence, self-efficacy, and health literacy among elderly patients with diabetes mellitus. The tool consists of four parts: the first part gathers demographic information such as age, sex, education, income, duration of illness, and type of treatment; the second part evaluates medication compliance using statements aligned with adherence behaviors; the third part measures self-efficacy through confidence-based activities related to diabetes self-management; and the fourth part assesses health literacy in terms of understanding and applying diabetes-related information. Each item in the last three sections is rated using a 4-point Likert scale, with response options ranging from "Never" (1) to "Always" (4) or "Not Confident" (1) to "Very Confident" (4), depending on the construct being measured. The instrument was adapted from validated frameworks such as the Morisky Medication Adherence Scale (MMAS-8) and the Diabetes Management Self-Efficacy Scale (DMSES), with modifications to ensure cultural relevance and clarity for older adults in community settings. Prior to full deployment, the tool underwent a pilot test and reliability analysis to ensure its appropriateness, reliability, and internal consistency. This instrument is intended to capture a comprehensive understanding of how elderly diabetic patients manage their condition, which guided the interpretation of findings and the formulation of actionable recommendations.

Data Gathering Procedure

Before conducting the research, approval was obtained from the PWU Ethics Review Committee, ensuring compliance with ethical standards through an ERB certificate. Following this, the researcher secured permission from the Office of the Hospital Director to conduct the study. Once authorized, participants were recruited and screened to ensure voluntary participation and to provide thorough explanations of the study's purpose and nature. To maintain the integrity and availability of the collected data, researchers personally distributed the questionnaires.

Analysis and Interpretation

Frequency and Percentage. To answer problems number 1 and 2, the demographic profile of the respondents and the factors affecting the nurses' competency, frequency, and percentage were used to describe the demographic profile of the respondents. Weighted Mean. To answer problems number 2 and 3 on the level of competency of nurses, the weighted mean was used as it was rated using a Likert scale as follows.

RESULTS AND DISCUSSION

SOP 1. Demographic Profile of Respondents

The demographic characteristics of the respondents were analyzed using frequency and percentage distributions.

Table 1.
Demographic Profile of Respondents

Variable	Mean	Std. Dev	Min	Max	Interpretation
Age	3.25	0.89	1	4	The majority aged 60–70 years
Gender	1.51	0.50	1	2	Balanced male–female distribution
Educational attainment	2.53	1.19	1	4	Most had a secondary education
Monthly income	2.50	1.23	1	4	Predominantly low to middle income
Marital status	2.04	0.48	1	4	Majority married
Duration of diabetes diagnosis	2.08	0.91	1	4	Most diagnosed 5–10 years
Treatment type	1.72	0.66	1	3	Oral hypoglycemics most common
Living arrangement	2.39	1.07	1	4	The majority live with their families

The demographic findings indicate that the majority of respondents were aged 60–70 years, representing the relatively younger cohort within the elderly population. Individuals in this age range generally retain the capacity for independent diabetes self-management; however, emerging age-related physiological and cognitive changes may begin to influence treatment adherence and self-care behaviors (Chen et al., 2021). The distribution of respondents by sex was nearly equal, suggesting adequate representation of both male and female older adults with diabetes and minimizing gender-related sampling bias.

Regarding educational attainment, most participants reported having completed secondary education. While this reflects basic literacy skills, the limited proportion with higher educational backgrounds may restrict health literacy, particularly in understanding complex diabetes management regimens. Evidence suggests that lower educational attainment among older adults is associated with diminished diabetes knowledge, suboptimal self-care practices, and poorer glycemic control (Alvis et al., 2022).

Most respondents reported low to middle monthly income levels. Financial constraints are a critical factor in diabetes management, as they may limit access to medications, nutritious food options, and essential supplies for glucose monitoring. Consistent with previous research, socioeconomic disadvantage remains a strong predictor of inadequate diabetes self-management and poor clinical outcomes among elderly populations (Wang & Zhang, 2023).

The majority of participants were married and residing with family members, a pattern commonly observed in Asian cultural contexts where older adults typically benefit from intergenerational household support. Family involvement has been shown to positively influence medication adherence, emotional well-being, and engagement in routine self-care activities among elderly individuals with chronic illnesses, including diabetes (Li & Xu, 2021).

Regarding clinical characteristics, most respondents had been living with diabetes for approximately 5–10 years. This duration reflects a phase of disease progression in which individuals often struggle to maintain long-term adherence to lifestyle modifications and pharmacologic regimens. Previous studies highlight that patients in the mid-course of diabetes frequently experience treatment fatigue and declining self-management consistency (Rahman et al., 2020). Oral hypoglycemic agents were the most frequently reported treatment modality, aligning with established management guidelines for type 2 diabetes in older adults, where oral medications are typically preferred unless contraindicated (Zhou et al., 2022).

The demographic and clinical profile of the respondents depicts an elderly population characterized by moderate educational attainment, constrained financial resources, and strong family support systems. These factors are critical for contextualizing subsequent findings on medication adherence, self-efficacy, and health literacy. The results underscore the importance of developing targeted interventions that emphasize simplified health education, financial accessibility, and family-centered support to optimize diabetes management outcomes in this population.

SOP 2. Levels of Medication Compliance, Self-Efficacy, and Health Literacy

A. Medication Compliance

Medication compliance was assessed using multiple items aligned with adherence behaviors. Weighted means were computed for each item.

Table 2.
Medication Compliance by Item

Item	Weighted Mean	Interpretation
I take diabetes medication as prescribed by the doctor	3.21	High
I can take the medicine on time without being reminded	3.05	High
Even though I felt better, I still kept taking the medicine	2.98	Moderate
I will replenish the medicine in time before it runs out	3.12	High
I won't miss taking my medicine, even if I feel good	2.95	Moderate
I always carry medicine with me when traveling or going out	2.87	Moderate
I will not reduce the dosage on my own without consulting a doctor	3.18	High
I understand the importance of taking medicine on time every day	3.42	Very High

The findings indicate that elderly patients with diabetes generally exhibit a high level of medication compliance, although certain adherence behaviors are only practiced to a moderate extent. Statements reflecting knowledge and awareness of medication adherence received the highest ratings. In particular, the item “*I understand the importance of taking medicine on time every day*” yielded a very high weighted mean (3.42), highlighting strong awareness of the role of timely medication intake in preventing diabetes-related complications. Similarly, high mean scores for *taking medications exactly as prescribed* (3.21) and *not altering dosage without physician consultation* (3.18) suggest that most respondents consistently comply with medical recommendations.

Despite this overall positive trend, several behaviors were rated only as moderately compliant. These included *continuing medication even when feeling better* (2.98), *avoiding missed doses during periods of well-being* (2.95), and *bringing medications while traveling* (2.87). These findings indicate that although respondents have adequate knowledge of medication adherence, maintaining consistent routines—particularly during travel or when symptoms improve—remains challenging. Such gaps may be attributed to age-related factors such as forgetfulness, physical limitations, or diminished confidence in long-term self-management.

These results are consistent with existing literature. Alqarni et al. (2021) reported that older adults with diabetes often demonstrate good awareness of adherence principles but struggle with translating this knowledge into sustained daily practices, especially during lifestyle disruptions. Similarly, Khayyat et al. (2020) found that medication adherence tends to decline when patients perceive symptomatic improvement, potentially leading to false reassurance and missed doses. Conversely, the high level of awareness observed among respondents aligns with findings by Reyes et al. (2022), who emphasized that diabetes education interventions significantly enhance older adults' understanding of the importance of medication adherence, even though behavioral consistency may remain variable.

Overall, the findings suggest that elderly diabetic patients in this study possess strong awareness and generally favorable medication compliance. Nevertheless, targeted strategies—such as reminder systems, adherence planning during travel, and reinforced counseling on the importance of continuous medication use during asymptomatic periods—are necessary to strengthen routine adherence. Enhancing these aspects of self-management is essential to achieving sustained glycemic control and reducing the risk of long-term diabetes-related complications.

B. Self-Efficacy

Self-efficacy was measured through confidence-based activities related to diabetes self-management.

Table 3.
Self-Efficacy by Item

Item	Weighted Mean	Interpretation
I can continue to exercise regularly	3.01	High
I can monitor my blood sugar level regularly	3.08	High
I can control my diabetes without much help from others	2.92	Moderate
I can ask the doctor or nurse questions when I have difficulty	3.25	High
I can cope with the stress related to my illness	3.04	High
I can adjust my food intake if blood sugar is too high/low	3.11	High
I can control my emotions when depressed because of diabetes	2.89	Moderate

The findings indicate that elderly patients with diabetes generally demonstrate high self-efficacy, particularly in proactive, task-oriented self-management behaviors. High mean scores were observed for activities such as regular blood glucose monitoring (3.08), modifying dietary

intake in response to abnormal blood sugar levels (3.11), and actively seeking clarification from healthcare professionals when difficulties arise (3.25). These results suggest that many older adults feel confident in managing routine diabetes-related tasks and recognize the importance of effective communication with healthcare providers. Such confidence is clinically significant, as self-efficacy has been consistently associated with improved glycemic control, sustained self-care behaviors, and better long-term health outcomes in individuals with diabetes.

In contrast, several dimensions of self-efficacy were rated at only a moderate level. Specifically, respondents reported lower confidence in controlling their diabetes without assistance from others (2.92) and in managing emotional distress or depressive feelings related to their condition (2.89). These findings imply that while elderly patients are capable of performing practical aspects of diabetes care, they may face challenges in emotional regulation and independent disease management. This pattern reflects the common reliance of older adults on family support systems and highlights the psychological burden associated with living with a chronic illness.

These observations are supported by existing literature. Zhao et al. (2020) reported that although older adults with diabetes often exhibit strong confidence in routine self-care activities, emotional self-efficacy tends to decline with advancing age due to factors such as psychological stress, comorbid conditions, and reduced social support. Similarly, Wang and Lin (2021) found that elderly diabetic patients typically demonstrate high self-efficacy in medication adherence, blood glucose monitoring, and dietary management, yet frequently require additional psychosocial support to address diabetes-related emotional distress. Furthermore, Bautista and Ong (2022) emphasized that actively engaging with healthcare providers by asking questions and seeking clarification significantly enhances self-efficacy and promotes more effective self-management practices among older adults.

These findings suggest that while elderly patients with diabetes possess a strong foundation in practical self-management skills, targeted interventions are needed to strengthen emotional coping abilities and support independent disease control. Interventions that incorporate stress management strategies, counseling services, and family-centered support mechanisms may be particularly effective in addressing moderate areas of self-efficacy.

C. Health Literacy

Health literacy was assessed in terms of understanding and applying diabetes-related information.

Table 4.
Health Literacy by Item

Item	Weighted Mean	Interpretation
I understand the information provided by the doctor/nurse	3.28	High
I can read and follow medicine labels and instructions	3.22	High
I know how to use a blood glucose meter	3.35	Very High
I understand the importance of a healthy lifestyle	3.41	Very High
I know when to contact a doctor due to symptoms	3.19	High
I can obtain reliable information about diabetes	3.12	High
I can explain my illness to family/caregivers	3.05	High
I understand instructions regarding diet, medication, and activity	3.38	Very High

The findings indicate that elderly patients with diabetes in this study generally demonstrate high to very high levels of health literacy related to diabetes management. Respondents showed particularly strong competencies in understanding essential health information, including the proper use of blood glucose monitoring devices (3.35), recognizing the importance of maintaining a healthy lifestyle (3.41), and adhering to prescribed instructions regarding diet, medication, and physical activity (3.38). These very high weighted mean scores suggest that most older adults possess adequate knowledge of the core components of diabetes care and are able to integrate this information effectively into their daily routines.

High levels of health literacy were also evident in practical and decision-making skills. Participants reported strong abilities in reading and interpreting medication labels (3.22), identifying symptoms that require medical consultation (3.19), and accessing reliable sources of diabetes-related information (3.12). These findings imply that respondents are capable not only of understanding health information provided by healthcare professionals but also of independently navigating health resources when necessary. Furthermore, the ability to clearly explain their condition to family members or caregivers (3.05) reflects functional health literacy, which is particularly important for shared decision-making and collaborative care among older adults who frequently depend on family support.

These results are consistent with existing research. Nutbeam and Lloyd (2021) emphasized that health literacy among older adults improves when healthcare providers offer clear, structured, and patient-centered education—an approach that may explain the high literacy levels observed in the present study. Similarly, Wu et al. (2020) found that adequate health literacy is strongly associated with improved diabetes self-care behaviors, including medication adherence, blood glucose monitoring, and lifestyle modification. In addition, Li and Bautista (2022) reported that elderly patients with higher health literacy demonstrate greater confidence in recognizing warning signs and determining when to seek professional care, findings that align with the high scores observed in symptom recognition in this study.

The results suggest that participants have a strong foundation in diabetes-related health literacy and can apply this knowledge effectively to manage their condition. This level of health literacy is likely to contribute positively to self-efficacy, treatment adherence, and overall health outcomes. Nevertheless, ongoing education and reinforcement remain essential to sustain and

further enhance health literacy, particularly as diabetes management continues to evolve with advancements in medications, technologies, and care guidelines.

D. Overall Summary

Table 5.
Overall Weighted Means

Variable	Weighted Mean	Interpretation
Medication Compliance	3.04	High
Self-Efficacy	3.08	High
Health Literacy	3.26	High

The overall findings demonstrate that elderly patients with diabetes in this study exhibit high levels of medication compliance ($M = 3.04$), self-efficacy ($M = 3.08$), and health literacy ($M = 3.26$). Collectively, these results indicate that the participants possess adequate knowledge, confidence, and consistent health-related behaviors necessary for effective diabetes self-management. Among the three variables, health literacy yielded the highest mean score, suggesting that most respondents are able to comprehend diabetes-related instructions and apply health information effectively when making decisions about their care.

The high level of self-efficacy observed further reflects respondents' confidence in managing essential daily diabetes-related activities, including blood glucose monitoring, dietary adjustments, and communicating concerns with healthcare professionals. This finding is particularly important, as diabetes management requires sustained behavioral engagement, and individuals with higher self-efficacy are more likely to maintain long-term adherence to recommended self-care practices and lifestyle modifications.

Similarly, the overall high level of medication compliance indicates that respondents consistently follow prescribed pharmacological regimens. Although earlier findings identified moderate adherence in specific situations—such as during travel or periods of symptom improvement—the aggregate results still reflect a strong commitment to proper medication use. Consistent adherence to medication remains a critical factor in preventing diabetes-related complications and achieving optimal glycemic control.

These combined findings are supported by existing literature. Alqahtani et al. (2021) reported that elderly individuals with diabetes who exhibit higher health literacy and stronger self-efficacy demonstrate significantly better adherence to medication and self-care behaviors. Likewise, Zamanzadeh et al. (2020) identified self-efficacy as a key mediating factor between health literacy and treatment compliance, suggesting that patients who understand their condition are more capable and motivated to follow recommended care routines. Furthermore, Shen et al. (2023) emphasized that interventions that integrate structured patient education with confidence-building strategies lead to meaningful improvements in adherence and glycemic outcomes among older adults with diabetes.

Overall, the consistently high scores across medication compliance, self-efficacy, and health literacy suggest that participants in this study are well-prepared to manage their condition effectively. This strong foundation in knowledge, confidence, and adherence has the potential to reduce long-term health risks and promote favorable clinical outcomes. Nonetheless, continued reinforcement through patient education, counseling, and supportive interventions

remains essential, particularly as elderly individuals face evolving health challenges associated with aging.

SOP 3. Relationship of Medication Compliance with Demographic Profile

Pearson correlation analysis was conducted to determine relationships among the three main variables.

Table 6.
Correlation Matrix

Variables	Medication Compliance	Self-Efficacy	Health Literacy
Medication Compliance	1.00	0.27	0.46
Self-Efficacy	0.27	1.00	0.50
Health Literacy	0.46	0.50	1.00

The correlation analysis revealed significant and meaningful relationships among medication compliance, self-efficacy, and health literacy in elderly patients with diabetes. The strongest association was observed between medication compliance and health literacy ($r = .46$), indicating a moderate positive correlation. This finding suggests that individuals with higher levels of health literacy are more likely to adhere to prescribed medication regimens. Patients who can understand diabetes-related information, interpret medical instructions, and recognize the implications of non-adherence are better equipped to take medications accurately and consistently.

A weaker but still positive correlation was identified between medication compliance and self-efficacy ($r = .27$). This relationship indicates that greater confidence in managing diabetes-related tasks is associated with improved medication adherence, although the effect is less pronounced than that of health literacy. These results imply that confidence alone may be insufficient to ensure consistent adherence unless it is supported by adequate knowledge and comprehension of treatment instructions.

In addition, self-efficacy demonstrated a moderate positive correlation with health literacy ($r = .50$), suggesting that patients with higher health literacy tend to feel more capable of performing diabetes self-management behaviors. When individuals clearly understand aspects of care such as blood glucose monitoring, dietary regulation, and medication use, they are more likely to develop confidence in their ability to manage their condition effectively.

These findings are consistent with previous research. Liu et al. (2021) reported that health literacy is a significant predictor of medication adherence among older adults, largely due to its role in enhancing patients' ability to process and apply treatment-related information. Similarly, Torres et al. (2022) found that while self-efficacy contributes to medication adherence, its effectiveness is strongly influenced by the individual's health literacy, underscoring the role of knowledge in bolstering confidence. In support of this interaction, Chen and Huang (2020) demonstrated that the combined influence of health literacy and self-efficacy results in superior diabetes self-management outcomes compared to either factor alone.

Overall, the correlation matrix indicates that although medication adherence, self-efficacy, and health literacy are interrelated, health literacy plays a central role by influencing both confidence and adherence. These results highlight the importance of implementing targeted

educational interventions, clear, simplified communication strategies, and patient-centered counseling to further strengthen diabetes management among older adults.

SOP 4. Proposed Action Plan

Based on the findings, the following action plan is recommended: Action Plan for Improving Diabetes Management among Elderly Patients.

Purpose of the Action Plan

To strengthen diabetes self-management among elderly patients by sustaining high levels of health literacy, self-efficacy, and medication compliance while addressing identified gaps in emotional coping, routine adherence, and independent disease management through structured, patient-centered, and family-supported interventions.

Key Result Area	Rationale	Strategies / Activities	Responsible Person(s)	Budget Allocated (Yuan)	Evaluation Criteria
1. Strengthen Medication Adherence in Daily and Travel Situations	Results showed overall high medication compliance, but moderate adherence during travel and when patients feel better	• Conduct medication adherence refresher sessions • Provide pill organizers and travel medication kits • Implement SMS/phone reminder system	Nurse Educator Pharmacist	¥8,000	• Increase mean adherence score to ≥ 3.20 • Reduced reports of missed doses • Improved refill consistency
2. Enhance Emotional Coping and Diabetes-Related Stress Management	Self-efficacy was moderate in controlling emotions related to diabetes	• Group counseling and stress management sessions • Referral to social worker/psychologist when needed • Peer-support group meetings	Psychologist Medical Social Worker Nurse	¥10,000	• Improvement in emotional self-efficacy score to ≥ 3.10 • Reduced self-reported diabetes distress
3. Sustain and Update Diabetes Health Literacy	Health literacy showed the highest mean but requires reinforcement due to evolving treatments and technologies	• Quarterly diabetes education sessions • Distribution of simplified educational materials • Demonstrations on glucose monitoring and medication use	Nurse Educator Diabetes Coordinator	¥7,000	• Maintain health literacy mean ≥ 3.30 • Improved patient ability to explain care instructions

Key Result Area	Rationale	Strategies / Activities	Responsible Person(s)	Budget Allocated (Yuan)	Evaluation Criteria
4. Improve Independent Diabetes Self-Management Skills	Moderate confidence was noted in managing diabetes without help	• Skills training on independent glucose monitoring • Gradual reduction of caregiver assistance with supervision • Individual coaching sessions	Nurse Educator Primary Care Nurse	¥6,500	• Increase independence self-efficacy score to ≥ 3.10 • Reduced reliance on caregiver assistance
5. Strengthen Family Involvement in Diabetes Care	Family support was identified as a major facilitator of adherence and confidence	• Family-centered diabetes education sessions • Caregiver orientation workshops • Development of family-care action guides	Nurse Educator Medical Social Worker	¥5,500	• Improved caregiver knowledge scores • Increased patient-reported family support
6. Improve Patient-Provider Communication	High self-efficacy in asking questions should be sustained and encouraged	• Communication skills workshops for elderly patients • Encourage question-and-answer time during consultations • Use of patient question prompt lists	Physicians Nurses	¥3,500	• Increased patient engagement during visits • Higher satisfaction scores
7. Continuous Monitoring and Evaluation of Diabetes Outcomes	To ensure sustainability and effectiveness of interventions	• Quarterly review of glycemic indicators • Periodic reassessment of adherence, literacy, and self-efficacy • Data-based modification of programs	Diabetes Care Team Quality Assurance Officer	¥4,500	• Stable or improved HbA1c levels • Sustained high scores across all variables

This action plan was developed based on study findings that generally demonstrated high levels of medication adherence, self-efficacy, and health literacy among elderly patients with diabetes. Despite these positive outcomes, the results also identified specific areas requiring improvement, particularly in emotional coping, independent disease management, and consistency of medication adherence during travel or periods of symptom improvement. The

plan is therefore designed not only to sustain existing strengths but also to address the identified gaps in a targeted, practical manner.

Purpose and Overall Approach

The primary purpose of this action plan is to enhance and sustain effective diabetes self-management among elderly patients by strengthening knowledge application, confidence, emotional resilience, and adherence behaviors. The plan adopts a patient-centered and family-supported approach, recognizing the important role of family involvement and healthcare provider support in elderly care. By integrating education, behavioral strategies, psychosocial support, and continuous monitoring, the plan aims to improve long-term diabetes outcomes and quality of life.

Key Focus Areas

1. Medication Adherence Enhancement

Although overall medication compliance was high, moderate adherence was observed in specific situations, such as travel and when patients feel asymptomatic. The plan addresses this by reinforcing routine-based adherence through reminder systems, practical tools like pill organizers, and targeted education. These strategies aim to minimize missed doses and ensure consistency in medication use.

2. Emotional Coping and Psychological Support

Self-efficacy related to emotional regulation was identified as a weaker area. Living with diabetes can lead to stress, anxiety, and emotional fatigue, especially among elderly individuals. The inclusion of counseling services, peer-support groups, and stress management sessions provides patients with coping mechanisms to manage emotional challenges associated with chronic illness.

3. Sustaining Health Literacy

Health literacy emerged as the strongest variable in the study, highlighting patients' ability to understand and apply diabetes-related information. However, as diabetes management evolves with new medications and technologies, continuous education is essential. Regular educational sessions and simplified learning materials ensure that patients remain informed and capable of making sound health decisions.

4. Promoting Independent Self-Management

Moderate confidence in managing diabetes without assistance suggests a need to empower patients toward greater independence. The plan includes skill-building activities and gradual reduction of caregiver reliance while maintaining supervision. This approach enhances patient autonomy without compromising safety.

5. Strengthening Family Involvement

Family support plays a critical role in the management of diabetes among the elderly, particularly in cultures where intergenerational caregiving is common. By educating and orienting family members, the plan ensures that caregivers can provide appropriate support without fostering dependence, thereby improving adherence and emotional well-being.

6. Enhancing Patient–Provider Communication

Effective communication with healthcare providers reinforces self-efficacy and informed decision-making. Encouraging patients to ask questions and participate actively in consultations promotes shared decision-making and improves satisfaction with care.

7. Continuous Monitoring and Evaluation

Ongoing assessment of glycemic outcomes, adherence, self-efficacy, and health literacy is essential for sustaining program effectiveness. Regular evaluation allows healthcare teams to adjust interventions based on patient progress and emerging needs.

Expected Impact

By addressing both behavioral and psychosocial components of diabetes management, this action plan aims to:

- Maintain high levels of medication adherence, self-efficacy, and health literacy
- Improve emotional resilience and independent self-care capabilities
- Reduce diabetes-related complications
- Enhance the overall quality of life for elderly patients

Conclusion

This action plan provides a structured and evidence-based response to the study findings. It balances reinforcing existing strengths with targeted interventions to address identified gaps, ensuring a holistic, sustainable approach to diabetes management for elderly patients. The plan is practical, patient-centered, and adaptable to hospital or community healthcare settings, making it suitable for implementation and long-term impact.

SUMMARY

The results of the study provided a comprehensive understanding of the demographic characteristics, medication compliance, self-efficacy, and health literacy levels among elderly patients with diabetes mellitus. The demographic analysis revealed a diverse group of older adults, differing in age, sex, educational attainment, income, living arrangements, and duration of diabetes diagnosis. These characteristics offered important context for interpreting their patterns of diabetes management, as age-related changes, socioeconomic factors, and living situations can influence both access to care and self-care behaviors.

Findings related to SOP 2 showed that elderly diabetic patients generally demonstrated high levels of medication compliance, though certain areas indicated room for improvement. Respondents frequently acknowledged taking medication as prescribed, replenishing their medications on time, and understanding the importance of taking medication on time. However, moderate ratings were observed in behaviors related to carrying medications when traveling, avoiding dose reductions without consultation, and continuing medication when feeling better. These results suggest that while overall compliance is high, some practical and motivational factors still challenge full adherence.

Self-efficacy results similarly reflected high overall confidence in performing diabetes-related tasks, including blood glucose monitoring, adjusting food intake, and asking questions during consultations. Moderate levels were observed in managing emotions and maintaining independence without assistance, which highlights potential psychosocial limitations. Health literacy emerged as the strongest area, with respondents demonstrating a high to very high ability to understand health information, follow instructions, use glucose meters, and obtain reliable information about their condition. Taken together, the overall weighted means indicated that elderly patients possess relatively strong competencies across all three variables, with health literacy being the most robust.

SOP 3 further revealed important relationships among the key variables. A moderate positive correlation was found between medication compliance and health literacy, suggesting that

patients who better understand their illness and treatment instructions are more likely to adhere to their medication regimen. A weaker yet positive relationship emerged between medication compliance and self-efficacy, indicating that confidence contributes to adherence but is not the primary driver. Meanwhile, self-efficacy and health literacy demonstrated a moderate association, supporting the notion that greater understanding of diabetes fosters stronger self-management confidence. These relationships highlight the interconnected nature of knowledge, confidence, and adherence among elderly diabetic patients, with health literacy appearing as the most influential factor.

Based on these findings, SOP 4 presented a targeted action plan to strengthen diabetes management among older adults. Recommended strategies emphasized regular counseling, family involvement, peer support activities, skills training, and simplified educational materials delivered in familiar languages. These interventions are designed to reinforce medication adherence, enhance self-efficacy, and elevate health literacy, ultimately promoting more effective diabetes self-care and reducing the risk of complications. The action plan reflects the study's conclusions and provides a practical framework for improving patient outcomes at the community level.

CONCLUSIONS

The findings of this study provided a comprehensive overview of the demographic profile, medication compliance, self-efficacy, and health literacy of elderly patients with diabetes mellitus. The demographic analysis revealed a heterogeneous population of older adults varying in age, sex, educational attainment, income level, living arrangements, and duration since diagnosis. These characteristics offer essential context for interpreting diabetes management behaviors, as age-related changes, socioeconomic conditions, and household support structures can significantly influence access to healthcare services and engagement in self-care practices.

Results for SOP 2 indicated that elderly patients generally exhibit high levels of medication adherence, although certain aspects warrant further improvement. Most respondents reported taking medications as prescribed, refilling prescriptions on time, and recognizing the importance of consistent medication intake. However, moderately rated behaviors—such as bringing medications during travel, refraining from dose adjustments without medical advice, and continuing treatment when symptoms improve—suggest that practical barriers and motivational factors continue to affect full adherence. Similarly, findings on self-efficacy reflected strong overall confidence in performing diabetes-related tasks, including blood glucose monitoring, dietary adjustments, and active participation during medical consultations. Nonetheless, moderate confidence in emotional regulation and independent disease management suggests underlying psychosocial challenges that may limit sustained self-care.

Health literacy emerged as the strongest domain among the three variables, with respondents demonstrating high to very high capacity to understand health-related information, follow medical instructions, operate glucose monitoring devices, and access reliable sources of diabetes-related information. Collectively, the weighted means suggest that elderly patients have relatively strong competencies in medication adherence, self-efficacy, and health literacy, with health literacy the most robust factor influencing diabetes management.

Further analysis under SOP 3 revealed significant relationships among the key variables. A moderate positive correlation between medication compliance and health literacy indicates that patients with a better understanding of their condition and treatment instructions are more likely to adhere to prescribed regimens. A weaker yet positive association between medication compliance and self-efficacy suggests that while confidence supports adherence, it is not the primary determinant. Additionally, the moderate correlation between self-efficacy and health literacy reinforces the notion that improved understanding of diabetes enhances confidence in self-management behaviors. These findings underscore the interconnected nature of knowledge, confidence, and adherence, with health literacy emerging as a central influencing factor.

In response to these findings, SOP 4 proposed a targeted action plan to further strengthen diabetes management among older adults. The recommended interventions focus on regular counseling, family involvement, peer support activities, skills development, and the provision of simplified educational materials in culturally and linguistically appropriate formats. These strategies are intended to reinforce medication adherence, enhance self-efficacy, and sustain health literacy, thereby promoting effective diabetes self-care and reducing the risk of long-term complications. Overall, the action plan translates the study's conclusions into a practical framework for implementation at the community and healthcare facility levels to improve patient outcomes.

RECOMMENDATIONS

1. Nursing Education

- Sustain and enhance patient education programs for elderly diabetic patients to maintain high levels of medication compliance, self-efficacy, and health literacy.
- Integrate skills training, peer support, and confidence-building workshops into nursing curricula and continuing professional development programs to equip nurses with effective strategies for promoting self-management among older adults.
- Develop simplified, culturally sensitive educational materials, including visual aids and local language translations, to ensure inclusivity and accessibility for diverse patient populations.
- Include training on motivational interviewing and patient empowerment techniques to strengthen nurses' ability to foster self-efficacy and independent disease management in elderly patients.

2. Nursing Practice

- Implement regular counseling sessions, follow-up consultations, and medication reminders to reinforce adherence and promote consistent self-care behaviors.
- Encourage family involvement in patient care planning, recognizing the critical role of household support in enhancing adherence, emotional coping, and overall diabetes management.
- Utilize community-based workshops and digital health platforms to expand access to health literacy initiatives, ensuring elderly patients can interpret and apply diabetes-related information effectively.
- Integrate emotional support strategies into routine care, addressing moderate gaps in emotional self-efficacy and independent disease management.

3. Nursing Administration

- Develop policies to institutionalize structured diabetes management programs, incorporating patient education, self-efficacy enhancement, and health literacy initiatives into standard care protocols.

- Strengthen collaboration between nurses, pharmacists, community health workers, and local health units to ensure consistent messaging and coordinated diabetes education across all levels of care.
- Allocate resources for educational materials, counseling programs, and skills-training workshops, prioritizing interventions that address the specific needs of elderly patients with moderate self-efficacy or adherence gaps.
- Support ongoing monitoring and evaluation of patient outcomes, including medication compliance, self-efficacy, and health literacy, to inform data-driven improvements in diabetes care programs.

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