

Caregivers and Nurses Management before Admission with Sepsis in Older Adults at Surat Thani Province[†]

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Abstract

This descriptive cross-sectional study aimed to investigate the management of elderly care with sepsis prior to hospitalization by primary family caregivers and nurses in primary healthcare settings in Surat Thani Province. A total of 119 caregivers and 34 nurses participated in the study. Data were collected using a validated questionnaire on the management of older adults with sepsis before hospitalization, achieving a CVI of 1.00. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were employed for data analysis. The results revealed that the primary caregivers had a mean age of 46.54 ± 13.00 years. The majority (88.24 %) were unaware of the presence of sepsis in the elderly, and 64.71% did not notify community nurses when caring for affected individuals. Caregivers identified the main contributing factors to sepsis as decreased immunity (36.97 %), unsanitary environments (29.41 %), and poor hygiene practices (15.97 %). Their primary management strategies included symptom management and over-the-counter medication (81.51 %) as well as consulting public health personnel (35.29 %). Among nurses, the average age was 37.12 ± 8.90 years. The mean interval since their most recent home visit was 10.92 ± 7.86 weeks. The primary reasons for home visits included lack of health screening (14.29 %), uncontrolled diabetes mellitus (13.45 %), and at-risk blood glucose and blood pressure levels (12.61 %). Notably, 76.47 % of nurses did not assess sepsis risk. When risk assessments were conducted, they primarily involved monitoring vital signs (89.29 %), followed by blood glucose monitoring in patients with uncontrolled diabetes and wound surveillance (both at 46.43 %). Nurses perceived the leading causes of sepsis to be decreased immunity (48.74 %), environmental factors (36.97 %), and poor hygiene practices (31.09 %). Their management strategies focused on chronic disease management (83.33 %), personal hygiene care (73.81 %), and maintaining environmental cleanliness (66.67 %). Additionally, nurses provided care by evaluating signs and symptoms (90.48 %), recommending medical consultation (85.71 %), and offering education on basic infection prevention (76.19 %). These findings highlight the necessity for targeted training programs to enhance the capacity of both primary caregivers and nurses in sepsis risk assessment, early symptom recognition, and pre-hospital care. Such initiatives are critical to preventing and reducing the severity of sepsis among the elderly population.

Keywords: Caregivers and nurses management, Sepsis, Older adults

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Introduction

Sepsis is the body's response to infection and is a leading cause of hospitalization, ranking among the top three causes of death. Approximately 87 % of sepsis cases are community-acquired (The Centers for Disease Control and Prevention, 2024). In 2019, the mortality rate from sepsis in the United States among individuals aged 65 years and older was 277.4 per 100,000 population. The mortality rate due to sepsis increased with age, from 150.7 per 100,000 population in those aged 65 - 74 years, to 331.8 per 100,000 in those aged 75 - 84 years, and reaching 750 per 100,000 in individuals aged 85 years and older (Kramarow, 2021). In Surat Thani Province, the mortality rate from severe community-acquired sepsis was reported at 31.19 % (Office of Health Region 11, 2023), exceeding Thailand's national benchmark, which is set at no more than 26%. Additionally, individuals aged 65 years and older are 13 times more likely to be hospitalized with sepsis compared to younger individuals (Sepsis Alliance, 2023).

Sepsis impacts patients both physically and psychologically. Additionally, it causes significant stress and anxiety among family members due to the sudden and unprepared nature of the illness (Sangsongrit, 2017). Family members often experience reduced appetite and insomnia, which may lead to health deterioration (Laosupap, et al., 2019). From an economic perspective, the cost of sepsis care in hospitals across the United States, including nursing care expenses, amounts to approximately 1.9 trillion THB per year. Sepsis is recognized as a leading cause of hospitalization, with annual healthcare expenditures exceeding 1.1 trillion THB (Sepsis Alliance, 2022).

The experience and knowledge of caregivers in elderly care significantly influence the health outcomes of elderly adults (Sawatphol et al., 2014). The caregiving capacity depends on various factors, such as the caregiver's knowledge, skills, and the family's caregiving potential (Jaikamwang et al., 2019). Additionally, nurses from primary healthcare units play a crucial role in providing care for dependent and bedridden elderly individuals. However, challenges remain due to the lack of systematic operations, insufficient integration of health and social care services, and inadequate staffing (Sawasdiponl et al., 2014). Although healthcare personnel contribute to improving the physical and mental well-being of older adults, community-level healthcare services often fail to comprehensively cover all target groups, particularly elderly individuals with chronic illnesses requiring rehabilitation. This is primarily due to workforce shortages and a lack of interdisciplinary knowledge and geriatric medicine expertise, which hinders the transfer of knowledge to families and caregivers (Sawasdipon et al., 2014). Furthermore, it has been observed that both primary healthcare personnel and community members tend to provide care based on their individual perceptions and understandings derived from diverse sources, leading to inconsistencies in patient care (Boonyanam, 2022).

A review of the literature in Thailand has revealed a lack of studies focusing on the management of elderly care with sepsis prior to hospitalization by family caregivers and nurses. Such information is essential for nurses and relevant agencies to understand the current care management practices, enabling them to develop appropriate care plans for monitoring, prevention, and timely intervention when risks arise or when sepsis occurs. This would contribute to reducing morbidity and mortality rates associated with sepsis among the elderly population. Therefore, as a nurse practitioner, the researcher aims to investigate the management of elderly care with sepsis prior to hospitalization by primary family caregivers and nurses in primary healthcare settings.

Methodology

Research design and setting

This study employed a retrospective descriptive design to investigate the management of elderly care with sepsis prior to hospitalization by family caregivers and nurses in primary healthcare settings in Surat Thani Province.

Population

The researchers utilized a total population sampling method, including all primary family caregivers and nurses from primary healthcare settings who provided care for elderly patients with sepsis between February and July 2023, comprising 119 family caregivers and 34 nurses, totaling 153 participants. The inclusion criteria for primary family caregivers were: Aged ≥ 18 years; Serving as the primary caregiver for an elderly person with sepsis for at least 6 months; Ability to speak and understand Thai; and Willingness to participate in the study. The inclusion criteria for nurses were: Ability to listen, speak, read, and write in Thai; Direct involvement in the care of elderly patients with sepsis included in the study; and Willingness to participate in the study. The exclusion criterion for both primary family caregivers and nurses was the presence of cognitive or decision-making impairments at the time of participation in the study.

Data collection

The data collection utilized a questionnaire regarding the management of older adults with sepsis prior to hospitalization, administered by primary family caregivers and nurses in primary healthcare settings, achieving a Content Validity Index (CVI) of 1.00. The questionnaire has multiple-choice and fill-in-the-blank questions aimed at obtaining the most accurate answers based on the respondents' real-life experiences. Data collection was executed via interviews with caregivers, encompassing primary family members and nurses from primary healthcare facilities. Data collection was performed over a duration of 30 min.

Ethical consideration

The research obtained approval from the Ethics Review Committee of Walailak University (WUEC-22-177-01). Prior to obtaining informed consent, eligible participants were provided with detailed information about the research aims, methodologies, potential risks, advantages, confidentiality protocols, and their rights to withdraw from the study.

Data analysis

Descriptive statistics, including frequency, percentage, mean, and standard deviation, were utilized to examine the data and food consumption frequency data. Chi-square statistics were utilized to explore relationships within the dataset.

Results

General characteristics of primary family caregivers providing care for elderly patients with sepsis at home

A total of 119 primary family caregivers were responsible for caring for elderly patients with sepsis at home. Half of the caregivers were female (54.62 %), with a mean age of 46.54 ± 13.00 years. Two-fifths held a bachelor's degree (41.18 %), followed by those who had completed lower/upper secondary education or vocational certificates (29.41 %), as shown in **Table 1**.

Table 1 Frequencies, percentages, and mean values of general characteristics of primary family caregivers providing care for elderly patients with sepsis at home (n = 119).

General information of primary family caregivers	Number	Percentage (%)
Gender		
Female	65	54.62
Male	54	45.38
Age (Mean = 46.54 ± 13.00 , Min – Max = 25 – 78)		
Educational level		
No formal education/Primary school	15	12.60
Lower/Upper secondary school/Vocational certificate	35	29.41
Diploma/Higher vocational certificate	20	16.81
Bachelor's degree	49	41.18

Management of elderly care with sepsis prior to hospitalization by primary family caregivers

The majority of primary family caregivers providing care for elderly patients with sepsis at home were unaware that the elderly patient had developed sepsis (88.24 %). One-third of caregivers believed that the primary cause of sepsis was a weakened immune system (36.97 %), followed by environmental factors (29.41 %) and improper hygiene practices (15.97 %). Most primary family caregivers managed symptoms by providing symptomatic care or purchasing over-the-counter medications (81.51 %) and consulted public health personnel (35.29 %). Two-thirds of caregivers did not notify nurses responsible for elderly care in primary healthcare settings (64.71 %). Among those cases where nurses were involved, the majority conducted assessments of the elderly patients' symptoms and clinical signs (90.48 %), provided education on basic infection prevention (76.19 %), and offered guidance on monitoring abnormal symptoms (66.67 %), as shown in **Table 2**.

Table 2 Frequencies, percentages, means, and standard deviations of the management of elderly care with sepsis prior to hospitalization by primary family caregivers (n = 119).

Management of elderly care with sepsis prior to hospitalization	Number	Percentage (%)
Awareness of sepsis in elderly patients		
Unaware	105	88.24
Aware	14	11.76
Causes of sepsis		
Decreased immunity	44	36.97
Environment	35	29.41
Poor hygiene practices	19	15.97
Wounds	12	10.08
Unsafe food consumption	11	9.24
Lack of self-care knowledge	3	2.52
Initial care practices		
Symptom management / Over-the-counter medication	97	81.51
Consultation with public health personnel	42	35.29
Maintaining a clean environment	7	5.88
Wound care	2	1.68
Notification to nurses		
No	77	64.71
Yes	42	35.29
Nursing care activities *One caregiver could provide more than one type of care		
Assessment of symptoms and signs	38	90.48
Recommend seeking medical consultation	36	85.71
Education on basic infection prevention	32	76.19
Guidance on monitoring abnormal symptoms	28	66.67
Hospital referral for sepsis	3	7.14

General characteristics of nurses in primary healthcare settings

Data were collected from 34 nurses in primary healthcare settings regarding the management of elderly care with sepsis prior to hospitalization. The majority of nurses were female (83.19 %), with a mean age of 37.30 ± 8.28 years. Most held a bachelor's degree (84.03 %) and had never received training on sepsis patient care (81.51 %), as shown in **Table 3**.

Table 3 Frequencies, percentages, means, and standard deviations of general characteristics of nurses in primary healthcare settings (n = 34)

General characteristics of nurses	Number	Percentage (%)
Gender		
Female	26	76.47
Male	8	23.53
Age (Mean = 37.12 ± 8.90 , Min - Max = 24 - 58)		
Educational level		
Bachelor's degree	28	82.35
Postgraduate degree	6	17.65
Training on sepsis care		
Never attended	28	82.35
Attended	6	17.65

Management of elderly care with sepsis prior to hospitalization by nurses in primary healthcare settings

The management of elderly care with sepsis prior to hospitalization by nurses in primary healthcare settings involved home visits, with the most recent visit occurring on average 10.92 ± 7.86 weeks prior to the onset of sepsis. The highest proportion of home visits was conducted 4 weeks before the development of sepsis (23.53 %), followed by 12 weeks (21.01 %) and 24 weeks (16.82 %). The majority of nurses did not perform risk assessments for sepsis in elderly patients (76.47%). The most common reason for home visits was the patient's failure to attend health screenings (14.29%), followed by visits to diabetic patients with uncontrolled blood glucose levels (13.45 %) and elderly individuals with at-risk blood glucose and blood pressure levels (12.61 %). Among those who conducted risk assessments, the primary method was monitoring vital signs (89.29 %), followed by monitoring blood glucose levels in diabetic patients with poor glycemic control and wound surveillance, both at (46.43 %). Nurses identified the leading cause of sepsis in elderly patients as decreased immunity (48.74 %), followed by environmental factors (36.97 %) and inadequate hygiene practices (31.09 %). In terms of preventive care, most nurses advised elderly patients and their families to manage chronic diseases (83.33 %), maintain personal hygiene (73.81 %), and ensure environmental cleanliness (66.67 %). Additional recommendations included consuming nutritious food to boost immunity (64.29 %) and practicing hand hygiene (61.90 %), as shown in **Table 4**.

Table 4 Frequencies, percentages, means, and standard deviations of the management of elderly care with sepsis prior to hospitalization by nurses in primary healthcare settings (n = 34).

The management of elderly care with sepsis prior to hospitalization	Number	Percentage (%)
Most recent home visit (Mean = 10.92 ± 7.86 Min – Max = 1 - 8)		
2 weeks	14	11.76
3 weeks	5	4.20
4 weeks	28	23.53
8 weeks	14	11.76
12 weeks	25	21.01
16 weeks	2	1.68
20 weeks	11	9.24
24 weeks	20	16.82
Reasons for home visits		
Missed health screening	17	14.29
Uncontrolled diabetes mellitus	16	13.45
At-risk blood glucose and blood pressure	15	12.61
Stress conditions	12	10.08
Medication management	11	9.24
Uncontrolled hypertension	8	6.72
Others	40	29.61
Sepsis risk assessment		
No	91	76.47
Yes	28	23.53
Methods of sepsis risk assessment (Multiple Responses Allowed)		
Vital signs monitoring	25	89.29
Blood glucose monitoring in uncontrolled diabetes	13	46.43
Wound surveillance	13	46.43
Blood concentration monitoring	4	14.29
Triple lumen site assessment	3	10.71
Peritoneal dialysis fluid assessment	3	10.71
Environmental risk assessment	3	10.71
Urine observation	3	10.71

The management of elderly care with sepsis prior to hospitalization	Number	Percentage (%)
Causes of sepsis (n = 119)		
Decreased immunity	58	48.74
Environmental factors	44	36.97
Poor hygiene practices	37	31.09
Improper dietary habits	24	20.17
Chronic diseases	23	19.33
Wounds and improper wound care	14	11.76
Use of medical devices	13	10.92
Caregiver-related factors	8	6.72
Preventive care recommendations (Multiple Responses Allowed)		
Chronic disease management	35	83.33
Personal hygiene care	31	73.81
Environmental cleanliness	28	66.67
Healthy diet to boost immunity	27	64.29
Handwashing	26	61.90
Monitoring abnormal symptoms	24	57.14
Cleaning medical devices	22	52.38
Vaccination	19	45.24
Regular health check-ups	17	40.48
Proper wound care	16	38.10
Separating personal items	12	28.57
Adequate sleep	7	16.67
Exercise	8	19.05

Discussion

The findings of this study highlight critical gaps in the management of elderly care with sepsis prior to hospitalization by both primary family caregivers and nurses in primary healthcare settings. A significant proportion of family caregivers were unaware that the elderly individuals under their care were experiencing sepsis, leading to delays in seeking appropriate medical attention. This aligns with previous research indicating that caregivers often underestimate the severity of symptoms in elderly patients, opting for home-based care such as administering antipyretics or monitoring symptoms, which can contribute to disease progression and delayed treatment (Singjan et al., 2023).

For nurses in primary healthcare settings, the average interval between home visits and the onset of sepsis was approximately 11 weeks. The primary reasons for home visits were related to unmanaged chronic conditions, such as uncontrolled diabetes and hypertension, or missed health screenings. These findings are consistent with Paurohith (2023), who reported that nearly half of elderly individuals aged 80 and above encounter moderate issues with medication adherence. Additionally, Turnbol et al. (2020) emphasized that regular health check-ups are significantly associated with improved self-care behaviors among older adults. The study also revealed that most nurses did not routinely assess sepsis risk during home visits, despite recognizing decreased immunity, environmental factors, and poor hygiene as major causes of infection. Preventive measures provided by nurses focused on chronic disease management, personal hygiene, and environmental cleanliness. These interventions reflect the importance of proactive community healthcare services in reducing sepsis incidence. Ngamkham et al. (2018) supported this approach, noting that well-structured and high-quality healthcare services enhance the elderly population's access to care by fostering trust and confidence in healthcare systems.

Overall, these findings underscore the need for increased awareness and education among family caregivers regarding early signs of sepsis, as well as the implementation of standardized risk assessments by nurses during home visits. Strengthening community-based healthcare services, enhancing interdisciplinary collaboration, and providing targeted training on sepsis management could significantly reduce morbidity and mortality among elderly populations.

Conclusions

This study highlights significant challenges in the management of elderly care with sepsis prior to hospitalization, both at the family and primary healthcare levels. The lack of awareness among primary family caregivers regarding the early signs of sepsis contributes to delays in seeking appropriate medical care, often resulting in worsened health outcomes for elderly patients. Similarly, the absence of systematic risk assessment practices among nurses in primary healthcare settings further exacerbates the risk of late detection and intervention. Effective management of sepsis in the elderly requires a proactive and integrated approach. Enhancing caregiver education, promoting early recognition of sepsis symptoms, and implementing standardized protocols for risk assessment during home visits are critical strategies to reduce morbidity and mortality rates. Moreover, strengthening community healthcare services through interdisciplinary collaboration and continuous professional development for healthcare personnel will improve the overall quality of care.

In conclusion, addressing these gaps through targeted interventions and policy support can lead to more timely and effective management of sepsis in elderly populations, ultimately improving patient outcomes and reducing the healthcare burden associated with this life-threatening condition.

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