

SYSTEMATIC REVIEW

A Review of The Determinants of Economic Burden Among Caregivers Providing Long-Term Care For The Elderly

Nurul Ezam Asri Hasmat¹, Nur Ain Mahat², Syed Mohamed Aljunid³, Muhammad Kamil Bin Che Hasan², Muzaitul Akma Mustapa Kamal Basha², Hasanah Pairoh²

¹ Normah Medical Specialist Centre, Jalan Tun Abdul Rahman Yaakub, Petra Jaya, 93050 Kuching, Sarawak

² Kulliyah of Nursing Universiti Islam Antarabangsa Malaysia Kampus Kuantan, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, 25200 Kuantan, Pahang

³ Professor of Health Economics, Policy and Management, Department of Public Health and Community Medicine, School of Medicine, IMU University, Bukit Jalil, Kuala Lumpur

ABSTRACT

Introduction: Caregiving has emerged as a global challenge, and despite this, many young people take on the role of caregiver. The responsibility of providing long-term care can be especially demanding and overwhelming. This review aims to examine the economic burden experienced by caregivers and identify the factors contributing to financial stress in the context of long-term elderly care. **Materials and Methods:** A complete search was conducted on four databases: PubMed, ScienceDirect, ProQuest, and Scopus. This is to identify studies on caregivers' strain on elderly long-term care, particularly financial load. A narrative approach was utilised to examine and determine the prevalence of financial stress in long-term care for the elderly in literature. **Results:** The review found 19 publications that fit the criteria and offered information about the financial challenges that caregivers face. According to the articles evaluated, money played a significant impact in lowering or raising the caregiver load; however, other socio-demographic characteristics, such as education level, age, and location of residence, also contributed to finances. Most articles agree that inpatient expenditures are greater than outpatient costs, with one study reporting RM 3,051 for inpatients and RM 172.68 for outpatients. **Conclusion:** As medical technology advances in a developing country, the number of elderly people is increasing. While various forms of assistance are provided by government and non-governmental organisations (NGOs), healthcare costs remain high. Further research is needed to help reduce costs and economic burdens for the elderly, ensuring they can fully benefit from available healthcare services.

Malaysian Journal of Medicine and Health Sciences (2025) 21(SUPP6):302-308. doi:10.47836/mjmhs.21.s6.49

Keywords: Economic Burden, Elderly caregiver, Caregiver Burden, long-term care, Financial burden

Corresponding Author:

Nur Ain Mahat, PhD

Email: nurainmahat@iium.edu.my

Tel : +6013 2525987

INTRODUCTION

Global population is currently undergoing a significant demographic transformation as aging emerged as a universal trend across the globe. According to the United Nations, the world's population has significantly increased in the past 20th century and is projected to reach 9.7 billion by 2050(1). This growth is steadily accompanied by an increase in the elderly population, creating greater demands for long-term care and many

younger people are taking on caregiving responsibilities and face substantial physical, emotional, and financial burden in the process (2). Asian societies belief in cultural traditions of filial piety where the young one caring for the elderly parents. These beliefs create strong social expectations that children need to support their aging parents financially, physically, and emotionally, even when this requires considerable amount of personal sacrifice (3).

Malaysian exemplifies this cultural context, as the country is simultaneously experiencing rapid demographic aging. Malaysian population on elderly aged 60 and above will soon reach 15%, marking its transition to an aged country status (4). It is said that healthcare and medication costs are rising in line with

pattern observed in other aging countries (5). With this, the financial pressures on Malaysian caregivers have become particularly severe. Research in Southeast Malaysia reveals that 49.4% of 231 caregivers survive on monthly incomes between just RM1,000 to RM4,900 (3), amounts that barely cover basic living expenses let alone the additional cost of elderly care. These financial pressure and strains are the result of Malaysia’s status as a developing country with rising costs of living and in the healthcare settings. Congruent with another study stated that the aging population leads to greater healthcare costs and resources utilization, placing additional burdens on the caregivers (6).

Adding more to these challenges is life expectancy. While life expectancy has risen to 74.8 years as of 2023 (7), people are living longer but with a deteriorating quality of life (6). This causes extended care periods and greater dependency on caregivers which then leads to additional financial pressures (6). The additional financial pressure exponentially increases when it is combined with the severity and duration of age-related illnesses.

These combinations of factors collectively contribute to the cycle of economic burden that threatens the financial stability of caregivers across Malaysia. The caregivers without proper savings and without any financial support are susceptible to facing a higher economic burden (6). Despite increasing recognition of these challenges, comprehensive reviews synthesizing the key determinants of the economic burden experienced by long-term caregivers of older adults remain scarce. This review aims to address this gap by systematically analyzing and consolidating existing evidence on the factors contributing to financial strain among caregivers. The findings will inform policy formulation and the development of targeted support interventions. Thus, the government and policymakers need to develop a support system that can help alleviate these growing pressures on individuals providing care for aging family members.

MATERIALS AND METHODS

Method

For the review, articles were systematically searched across health-related databases, including PubMed, ScienceDirect, ProQuest, and Scopus. The search strategy used relevant keywords and Medical Subject Headings (MeSH) terms: (“family caregiver” OR “caregivers”) AND (“economic burden”) AND (“long-term care” OR “elderly care”) AND (“factors associated” OR “determinant factors”), in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. Alternative keywords were also used across databases to ensure a comprehensive search and expand the pool of relevant

articles.

The literature review was carried out by using PRISMA flow as shown in Figure 1.

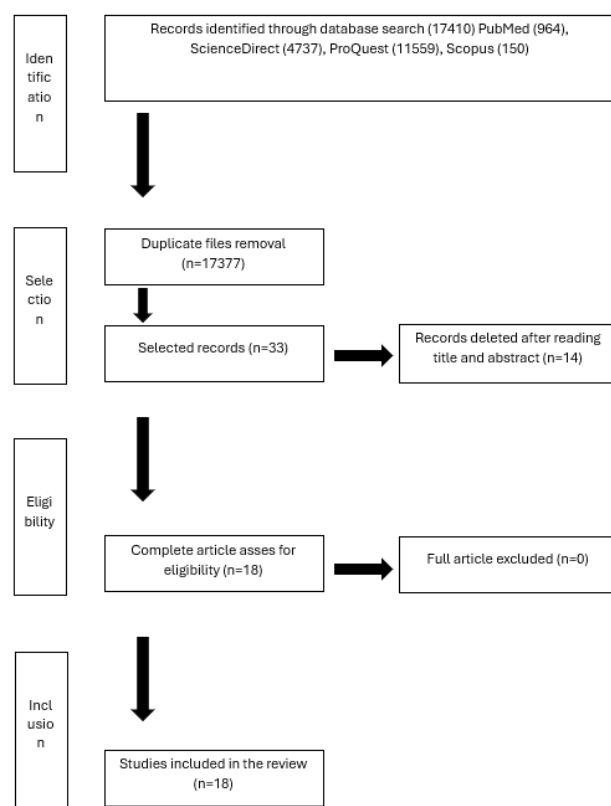


Figure 1: Literature search flow. For the literature review, the article searches on health-related databases such as PubMed, Oxford Journals, ScienceDirect, SpringerLink, Emerald Insight, ProQuest, and Scopus. The keywords and MESH terms used are “family caregiver,” “caregivers,” “economic burden,” “long-term care,” and “elderly care,” “factors associated,” “determinant factors” following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA).

Inclusion criteria

This review included studies published between 2014 and 2024 that examined the economic burden on caregivers providing long-term care to elderly aged 60 years and above. The World Health Organization defines individuals aged 60 years and older as elderly, particularly in developing countries, where this threshold reflects varying life expectancies and health outcomes(8). Studies were eligible for inclusion if they focused on caregivers rather than the elderly themselves and identified factors contributing to caregiver burden. Both qualitative and quantitative studies, including mixed-methods research, were considered. Only articles published in English were included in this review.

Exclusion criteria

Studies that focus on caregiver for non-elderly populations, studies involving elderly individuals without caregiver involvement, and studies examining

non-economic burdens such as emotional or stress alone were excluded from this review.

Quality appraisal

Eligible studies were assessed using the Joanna Briggs Institute (JBI) critical appraisal tools, which provide standardized checklist appropriate to each study design. No studies were excluded solely based on appraisal scores; instead, the JBI tools guided the evaluation of the findings and helped assess the overall strength of the evidence.

The appraisal was conducted out by using JBI table as shown in Table I below.

Table I: JBI Critical Appraisal Summary Table

Citation	Country/Source	Study Type/Nature	Key Contribution	JBI Checklist Applied	Score (✓ out of 8)	Appraisal Decision
1 (3)	Asia / Malaysia	Observational / Narrative	Cultural filial piety, caregiving norms in Asia	Not applicable	—	Background / include
2 (6)	Asia (unspecified)	Cross-sectional	1 in 5 caregivers burdened; many feel supported	Cross-sectional	6/8	Include
3 (7)	Malaysia	Government report	Malaysia's out-of-pocket health expenditure (RM 22.49B in 2019)	Not applicable	—	Background / include
4 (9)	Czech Republic	Cross-sectional	Caregiver roles by relationship, time in home care	Cross-sectional	7/8	Include
5 (10)	Ghana	Cross-sectional	Gender, economic burden, training gaps, productive time lost	Cross-sectional	6/8	Include with caution
6 (11)	Thailand	Cross-sectional	70.8% had no caregiver training	Cross-sectional	7/8	Include
7 (12)	South Africa	Cross-sectional	Burden related to income, age, education, hours of care	Cross-sectional	7/8	Include
8 (13)	Thailand	Observational	Elderly as income providers; families' economic vulnerability	Cross-sectional	6/8	Include with caution
9 (14)	Canada	Cross-sectional / Cost study	Gender and age influence on healthcare costs	Cross-sectional	7/8	Include
10 (15)	Singapore	Cost analysis	261% increase in health cost among ≥85 vs. 75 y/o; multimorbidity impact	Cross-sectional	7/8	Include

CONTINUE

Table I: JBI Critical Appraisal Summary Table (CONT.)

Citation	Country/Source	Study Type/Nature	Key Contribution	JBI Checklist Applied	Score (✓ out of 8)	Appraisal Decision
11 (16)	USA	Economic / Administrative data	Nursing home stay cost: USD 13K–115K	Costing study	6/8	Include
12 (17)	Malaysia	Cross-sectional	Income level, comorbidities, household structure, healthcare cost RM426.50/year	Cross-sectional	7/8	Include
13 (18)	Global (economic theory)	Conceptual / Theoretical	Aging populations and economic growth impact	Not applicable	—	Background / include
14 (19)	WHO / UN	Conceptual	WHO / UN Definitions	Definition of long-term nursing care	Not applicable	Background / include
15 (20)	WHO	Conceptual	Continuation of LTC definition	Not applicable	—	Background / include
16 (21)	Malaysia (DSW)	Administrative data	Federally funded elderly homes and number of residents	Not applicable	—	Background / include
17 (22)	Malaysia (State/Religious)	Administrative / Policy	Islamic/state-funded homes, religious support	Not applicable	—	Background / include
18 (23)	Malaysia (MOH/Welfare)	Registry / Policy	700–1000 unregistered nursing homes in Malaysia	Not applicable	—	Background / include

RESULTS

Findings

Based on the literature search flow shown in Figure 1, a total of 17,410 articles related to the economic burden were initially identified. After duplicate removal, screening of titles, abstracts, and full-text assessment, 33 articles were selected and after applying the inclusion criteria, only 18 articles were selected for review. The details of the findings regarding the determinants of the economic burden are discussed in the following section.

Roles of caregiver

Usually, the role of caregiver is filled by family members. A study in the Czech Republic showed that, out of 155 respondents, nearly half (45.2%) were partners of the patient, followed by 36.8% were their own children, 11% were grandchildren, and the rest were relatives, 59% of the caregivers were women (9). This finding was supported by another study, which also reported

that most caregivers were family members, with up to 68% being female (10). Nortey et al. (2017) (10) further reported that 62% of respondents indicated their financial burden increased due to caring for elderly relatives. Despite being thrust into the caregiving role, many of these caregivers had never received formal training. They assumed this responsibility out of a sense of duty as spouses, children, or grandchildren, reflecting the cultural concept of filial piety. For example, a study in Thailand showed that 70.8% of 103 respondents, had never received any training in elderly caregiving (11).

The caregiver burden is quite common. According to one study (6), one in five of 435 respondents reported feeling burdened by their caregiving responsibilities. Nevertheless, in Asia, children remain responsible for taking care of their elderly parents due to the strong cultural value of filial piety (3). Despite the burden, many caregivers still report feeling satisfied and supported in their role (6). This is not surprising, as many caregivers receive strong support from their own families (3). Due to this cultural emphasis on filial piety, it is common in Malaysia for adult children to care for their elderly parents, in contrast to Western countries, where nursing homes often play a larger role in elder care.

Economic burden determinants

Several variables can influence the burden on caregivers in elderly care. These include the caregiver's socio-demographic characteristics, the dependents' sociodemographic characteristics, duration of the illness, household income, the number of the illnesses, and the duration of care given.

1) Caregiver socio-demographic

Family members who act as caregivers usually provide unpaid care for their relatives who require physical, social, and even financial assistance. A study in South Africa found that caregivers with informal education and low income experienced greater burden compared to those with higher income and formal education (12). This highlights the sacrifices informal caregivers make to care for their relatives. According to the same study, caregiver burden was significantly associated with factors such as age, population group, education level, income, duration of caregiving, and hours of care provided per week ($p < 0.05$). These factors were also linked to the caregivers' physical health.

2) Dependents' sociodemographic

Some elderly people continue to provide income for their families, especially those of lower socioeconomic status (13). One study revealed that younger elderly individuals whose families are fully reliant on the patient's income are more vulnerable to economic hardship. A study in Canada (14) reported that the total annual healthcare

cost was approximately 2217 Canadian dollars, with women incurring higher costs than men. (14) The same study showed that healthcare cost increase with age where those under 65 years old incurred an average of 2217 Canadian dollars annually, and those aged 65 and above incurred up to 9398 Canadian dollars annually.

Therefore, if the care recipient is female, the associated economic burden on the caregiver is likely to be greater than for male recipient. Similarly, older individuals often require more frequent hospital visits, increased prescription use, and longer period of care, all of which contribute to greater economic burden on caregivers. A study in Singapore (15) supports this finding, showing that total healthcare cost significantly increases with age, with a 261% increase in costs for individuals aged 85 and above compared to those aged 75.

3) Duration of illness

For home care services, costs vary depending on the facility. According to one study(9), 31% of recipients use home care services for one to three hours daily, 29% for thirty minutes to one hour, 12% for three to six hours, 15% for six to eight hours, and 13% for more than eight hours each day. Recipients who reside in nursing homes for extended periods are more likely to impose a greater economic burden on caregivers. Conversely, for individuals who spend less time in nursing homes, family caregivers are often required to assume caregiving responsibilities themselves. This often results in reduced working hours or even complete withdrawal from employment, thereby contributing to increased productivity loss among caregivers.

The cost of nursing home care also varies significantly. One study(16) reported that for stays ranging from 21 to 100 days, costs can reach up to USD 13,160 per stay, with some cases exceeding USD 115,000. Prolonged illness leads to longer durations in home care and increased usage of medical devices, both of which escalate costs and add to the economic burden faced by caregivers.

4) Household income

In addition to their caregiving responsibilities, many informal caregivers also shoulder other family obligations. In a study (17), it reported that 40% of caregivers had between four to six children, 57% of the elderly care recipients still lived with their children, and 62.5% lived with their spouses. This situation can lead caregivers to experience a dual economic strain, as they are required to support both their own families and the care recipients simultaneously. Due to these overlapping financial responsibilities, more than 80% of family caregivers had to use their own savings to cover care-related expenses (10). Moreover, 47.4% of elderly individuals in Malaysia are classified as belonging to the

hardcore poverty group, and 9% are in the poor group, defined as having a household income of less than RM1,198 per month. In Malaysia, the hardcore poverty group refers to households whose monthly income falls below the Food Poverty Line Income (Food PLI), which as of 2022 averaged RM1,198 per month. This financial burden is compounded by other household necessities and financial commitments. Consequently, caregivers with lower incomes experience a higher burden compared to those in higher income brackets(12).

5) Number of illnesses

A study by (17) stated that almost 50% of the elderly individuals suffer from one to two diseases, often relying on outpatient care for less severe illnesses. However, those with multiple comorbidities tend to have higher healthcare costs. For example, a study conducted among older adults aged 65 and below found that healthcare costs for individuals with five medical conditions can reach up to CAD 2,073, compared to 377 Canadian Dollar for those with only two medical conditions (14). This represents a sixfold increase in total healthcare costs. Similarly, another study in Singapore showed that the healthcare costs for individuals with multiple medical conditions can reach SGD 15,148, compared to SGD 5,610 for those with only one medical condition (15)

6) Duration of the care given

Some caregivers have work and other responsibilities, which often force them to reduce their working hours to care for their dependents. One study (10) stated that, on average, caregivers lose approximately 219.5 productive hours per month, or about 54.9 hours per week, due to caregiving duties. As time spent on work, education, and other activities decreases, caregivers' burden tends to accumulate over time, leading to stress, financial problems, and reduced social activity.

Regarding the limitations of this review, a lack of studies conducted within the Malaysian population is apparent. More research is needed to understand the economic burden of long-term care for the elderly in Malaysia. Without this, it is difficult to establish a clear clinical association between the variables and the economic burden faced by caregivers in the Malaysian context.

DISCUSSION

The economic burden of caring for elderly individuals is deeply influenced by socio-demographic factors such as caregiver education, income, and the health status of dependents. Studies emphasize that caregivers with lower socioeconomic status face heightened burdens due to increased caregiving responsibilities, often depleting personal savings and limiting financial resources for other essential needs. Prolonged illnesses

necessitate extensive home care services and medical expenditures, further straining familial finances. Policies addressing income disparities and providing financial support mechanisms for caregivers are crucial to alleviating these burdens. Additionally, longitudinal studies across diverse populations, including Malaysia, are needed to inform targeted interventions and enhance the overall well-being of both caregivers and their elderly dependents.

Cost of aging

In recent years, the relationship between aging populations and economic growth has been a hot topic among economists. The main concern with the aging population is the increasing public spending on long-term care, healthcare, and other age-related expenses (18). Population aging presents challenges across social, economic, and cultural dimensions, evident in the increasing total healthcare expenditure each year.

According to the Malaysia National Health Account (7), out-of-pocket health expenditures in 2019 were up to RM 22,492 million. Based on the Household Income and Expenditure Survey in 2015, Malaysian households are divided into three income groups: B40 (below RM 3,860), M40 (RM 3,860 to RM 8,319), and T20 (above RM 8,319). In one study by (17), most of the respondents' households' income was less than RM1,000 a month, and almost half of them suffered from one to two diseases, with the top diagnosis being hypertension, followed by diabetes mellitus and high cholesterol. Many elderly are at risk of having one to two diseases, which adds to their economic burden in accessing healthcare services.

This increased burden is evident in higher out-of-pocket expenditures, as elderly individuals seek treatment at hospitals, clinics, traditional medicine practitioners, alternative healthcare providers, or over-the-counter services like pharmacies or 'sensei' shops (17). On average, the annual cost of healthcare utilization in the Malaysian community whether inpatient or outpatient was RM 426.50 (17). Given these figures, healthcare for the elderly is not only expensive but also complicated by the high disease burden among the elderly. This highlights a significant challenge for countries facing an aging population, as elderly individuals' susceptibility to diseases drives healthcare expenditures.

Long-term care

Long-term nursing care is defined as continuing health and social services provided to individuals with physical or mental disabilities who require ongoing assistance (19,20). Such services can be provided in institutional, home, or community settings and may include both formal and informal care offered by professionals or organizations. These services support elderly individuals who experience substantial declines

in functional abilities, helping them maintain their quality of life, rights, freedoms, and dignity. In low- and middle-income countries, long-term care for the elderly is generally inadequate, particularly when it comes to institutional-based care and facilities. As a result, many policies in these countries tend to lean towards a greater reliance on families and unpaid caregivers to provide care for their elderly.

In Malaysia, there are ten federally funded homes for the elderly and two homes for individuals with chronic illnesses, namely Rumah Seri Kenanga and Rumah Ehsan (21). In East Malaysia, there are five elderly homes funded by the state government and several Islamic care homes that are either operated or supported by religious authorities in the respective states (22). According to the Department of Social Welfare under Act 506, there are approximately 320 registered residential aged care facilities in the country. Additionally, there are 26 nursing homes registered under the Ministry of Health (Act 586). Nevertheless, there are approximately 700 to 1000 unregistered nursing homes (23). Only a few of these homes are run by the state government. Despite being funded by taxes, these nursing homes have stringent requirements for admission and a restricted number of resources available (22). These fully funded nursing homes served approximately 1413 elders in 2018 (21). At present, community and home-based long-term care services in Malaysia are not subject to any specific regulatory framework or oversight (23). As a result, the availability and quality of community and home-based long-term care services may vary across different regions and providers in Malaysia.

CONCLUSION

The economic burden on caregivers of the elderly arises from a complex interplay of various socio-demographic factors, healthcare needs, and caregiving dynamics. Research indicates that caregiver socio-demographic characteristics such as age, income level, education, and the amount of time spent caregiving significantly influence the economic strain they experienced. Studies, such as those by (12), highlight that caregivers with lower income and informal education are particularly vulnerable to higher burdens due to caregiving responsibilities.

In conclusion, understanding these multifaceted determinants is crucial for developing targeted interventions and support mechanisms aimed at alleviating the economic burden on caregivers. Policy efforts should focus on enhancing financial assistance, improving access to healthcare services, and providing comprehensive support systems that acknowledge and address the diverse needs of caregivers and their elderly dependents. Although awareness of these challenges has increased, there is still limited research summarizing the key factors driving the financial strain on long-term

caregivers for the elderly. This review aims to fill that gap by evaluating and integrating existing evidence on the causes of economic burden among caregivers, offering insights to guide policy decisions and support measures and by addressing these factors, policymakers can strive towards fostering a more sustainable caregiving environment that supports the well-being of both caregivers and the elderly population they care for.

CONFLICT OF INTEREST

Authors declare none.

REFERENCES

1. United Nations. Population. 2022.
2. Aung MN, Moolphate S, Yuasa M, Aung TNN, Koyanagi Y, Supakankunti S, et al. Community-Integrated Intermediary Care (CIIC) service model to enhance family-based, long-term care for older people: Protocol for a cluster randomized controlled trial in Thailand. *JMIR Res Protoc*. 2021 Mar 1;10(3).
3. Makhtar A, Ab Ghani NN, Syed Elias SM, Ludin SM. Social support and associated factors among family caregivers of older people in NorthEast Peninsular Malaysia. *Belitung Nurs J*. 2023 Jan 1;9(1):69–78.
4. Kristanti MS, Kusmaryanto, Effendy C. Common ethical dilemmas of family caregivers of palliative patients in Indonesia. Vol. 7, *Belitung Nursing Journal*. Belitung Raya Publisher - Belitung Raya Foundation; 2021. p. 246–50.
5. Md Yusuf M, Fairuz Syed Mohamad S, Amni Mohd Arshad N, Irnawaty Ibrahim R. Funding for Long-Term Care Cost: An Analysis among Malaysian Elderlies in Selangor. Vol. 18. 2022.
6. Aman Z, Liew SM, Ramdzan SN, Philp I, Khoo EM. The impact of caregiving on caregivers of older persons and its associated factors: A cross-sectional study. *Am J Physiol Regul Integr Comp Physiol*. 2020 May 22;133(1515):238–45.
7. M N H A _ H e a l t h _ E x p e n d i t u r e _ Report_1997-2019_02092021.
8. 1. World Health Organization. World Health Organization. Active ageing: a policy framework. Geneva: World Health Organization. 2002;
9. Maresova P, Lee S, Fadeyi OO, Kuca K. The social and economic burden on family caregivers for older adults in the Czech Republic. *BMC Geriatr*. 2020 May 11;20(1).
10. Nortey ST, Aryeetey GC, Aikins M, Amendah D, Nonvignon J. Economic burden of family caregiving for elderly population in southern Ghana: The case of a peri-urban district. *Int J Equity Health*. 2017 Jan 14;16(1).
11. Tamdee D, Tamdee P, Greiner C, Boonchiang W, Okamoto N, Isowa T. Conditions of caring for the elderly and family caregiver stress in Chiang Mai, Thailand. *J Health Res*. 2019 Apr 1;33(2):138–50.
12. Yakubu YA, Schutte DW. Caregiver attributes and socio-demographic determinants of caregiving burden in selected low-income communities in cape town, South Africa. *J Compassionate Health Care*.

- 2018 Dec;5(1).
13. Mohanty S, Venkateshan M, Das PK, Pandey A, Gehlot M, Gomathi B, et al. Socioeconomic Burden of Critically Ill Patients: A Descriptive Study. *Cureus*. 2023 Feb 28;
 14. Thavorn K, Maxwell CJ, Gruneir A, Bronskill SE, Bai Y, Konñ Pefoyo AJ, et al. Effect of socio-demographic factors on the association between multimorbidity and healthcare costs: A population-based, retrospective cohort study. *BMJ Open*. 2017 Oct 1;7(10).
 15. Picco L, Achilla E, Abdin E, Chong SA, Vaingankar JA, McCrone P, et al. Economic burden of multimorbidity among older adults: Impact on healthcare and societal costs. *BMC Health Serv Res*. 2016 May 10;16(1).
 16. Hurd MD, Michaud PC, Rohwedder S. Distribution of lifetime nursing home use and of out-of-pocket spending. *Proc Natl Acad Sci U S A*. 2017 Sep 12;114(37):9838–42.
 17. Koris R, Nor NM, Haron SA, Hamid TA, Aljunid SM, Nur AM, et al. The cost of healthcare among Malaysian community-dwelling elderly. *Jurnal Ekonomi Malaysia*. 2019;53(1):89–103.
 18. Jayawardhana T, Jayathilaka R, Nimnadi T, Anuththara S, Karadanaarachchi R, Galappaththi K, et al. The cost of aging: Economic growth perspectives for Europe. *PLoS One*. 2023 Jun 1;18(6 June).
 19. Ikegami N. Financing long-term care: Lessons from Japan. *Int J Health Policy Manag*. 2019 Aug 1;8(8):462–6.
 20. World Health Organization. Ageing and Health Unit. 2020.
 21. KEMENTERIAN PEMBANGUNAN WANITA, KELUARGA DAN MASYARAKAT KEBAJIKAN MASYARAKAT STATISTIK Laporan. 2018.
 22. Mohamad Yunus ain, Hazilah Abd Manaf N, Omar A, Juhdi N, Azahadi Omar M, Salleh M. Determinants of Healthcare Utilisation among the Elderly in Malaysia. Vol. 9, *Institutions and Economies*. 2017.
 23. Sallehuddin HM, Ibrahim R, Chai ST. The Long Term Care COVID-19 Situation in Malaysia. 2020; Available from: <https://www.researchgate.net/publication/341817735>