

REVIEW ARTICLE

Open Access

ADDRESSING NON-COMMUNICABLE DISEASES IN MEN IN MALAYSIA: PROBLEMS AND CHALLENGES FROM PERSPECTIVE OF FAMILY HEALTHMuhd Suhail bin Abdul Wali¹, Khalid bin Mokti^{1*}**Abstract**

Non-communicable diseases (NCDs) are becoming a serious issue for Malaysian men, affecting not just their health, but also the lives of their families. Many men delay seeking help because of social stigma and traditional views about masculinity, often making problems worse. Lifestyle factors like poor diet, lack of physical activity, and smoking further increase the risks. The aim of this review is to highlight how NCDs affect men in Malaysia, especially how these diseases impact families emotionally, financially, and through caregiving. By examining these connections, this review hopes to show why we need health policies and support systems that consider men's unique challenges. Promoting more male-friendly healthcare, raising awareness, and encouraging family and community involvement could help more men act early, making families and communities healthier in the long run.

Keywords: Men's health, non-communicable diseases, NCDs, masculinity.

*Correspondence Email: khalid.mokti@ums.edu.my

¹Department of Public Health Medicine, Faculty of Medicine & Health Sciences, Universiti of Malaysia Sabah, Jalan UMS, Kota Kinabalu 88400, Malaysia

Received: 26/03/2025

Accepted: 04/11/2025

Published (Online): 15/12/2025

INTRODUCTION

Issues relating to men's health have increasingly become a central focus for public health, owing to distinct physical, mental, and lifestyle risk factors that impact men in unique and often profound ways. Non-communicable diseases (NCDs) are among the most critical concerns worldwide and pose a particularly severe threat to men. Globally, men experience premature mortality at a higher rate compared to women, especially before the age of 70. According to World Health Organization (WHO) estimates, approximately 52% of all deaths arising from NCDs occur among men (Ministry of Health, 2019; PAHO, n.d.). Cardiovascular diseases (CVDs) remain the leading cause of death for men, accounting for 35.6% of mortality. This is an alarming persistence since 2000 that remained largely unchanged until 2016 (Zhang et al., 2021). These statistics illustrate a landscape where NCDs contribute to increased morbidity, mortality, and diminished quality of life for both individuals and communities.

Within Malaysia, the situation mirrors global trends but is contributed by local factors. NCDs have reached epidemic proportions, representing a major public health concern, and have substantially contributed to premature morbidity and mortality among men. Findings from the National Health and Morbidity Survey (NHMS) 2015 emphasize this reality where 16.7% of Malaysian men reported diabetes, 30.8% hypertension, and a striking 43.5% hypercholesterolemia. Alarmingly, more than half of these cases remained undiagnosed (7.6% for diabetes, 12.2% for hypertension, and 8.5% for hypercholesterolemia), revealing significant gaps in early detection and management (Ministry of Health, 2019). These gaps are also highlighted by subsequent data: in 2019, 4 in 10 adults in Malaysia had hypercholesterolemia, 3 in 10 had hypertension, and 1 in 5 lived with diabetes mellitus. Despite increasing public health interventions, by 2023, 1 in 3 adults still faced hypertension, 1 in 6 had diabetes mellitus, and 1 in 3 lived with hypercholesterolemia, showing persistent and ongoing challenges for cardiovascular disease management (Institute for Public Health, 2024).

Beyond these statistics, there is a clear gender disparity in health outcomes. Men in Malaysia live, on average, five to six years less than women and are twice as likely to die prematurely between the ages of 15 and 65 (Ministry of Health, 2019). This significant gap in life expectancy and premature death highlights the need for more deeper analysis of the burden and determinants of NCDs among men versus women. Factors contributing to this disparity include increased rates of smoking, hazardous occupational exposures, reluctance to seek medical care promptly, and culturally embedded behaviors related to diet, alcohol consumption, and physical inactivity (Hossin, 2021; Uwimana et al., 2023; Zhang et al., 2021).

Men's health is not only an individual matter but profoundly influences the wider family unit and broader community. This is especially evident in societies like Malaysia where men are frequently heads of household and primary breadwinners. Their ability to provide emotional, physical, and financial support is directly tied to their health status. When men are affected by chronic illness or experience premature death, family stability can be disrupted. This disruption manifests in emotional distress and financial strain, as both partners and children may struggle with increased caregiving responsibilities, anxiety about future wellbeing, and the potential for economic hardship (Grau Grau et al., 2022; Ningrum & Mas'udah, 2021).

NCDs such as heart disease, diabetes, cancer, and chronic respiratory illnesses exert an impact on Malaysian men, reinforcing these challenges at the family level (Ministry of Health, 2019). Men's vulnerability to CVD is driven by both biological predisposition and behavioral patterns, such as higher rates of smoking, excessive alcohol intake, and poor dietary habits

(Zhang et al., 2021). Occupational risks and delays in seeking medical attention also exacerbate disease progression and worsen outcomes (Hossin, 2021; Uwimana et al., 2023). Cultural pressures—expectations of stoicism, reluctance to seek help for mental health, and limited discourse around men’s wellbeing—further impede timely intervention and self-care (Abdullah et al., 2022; Uwimana et al., 2023).

The economic burden borne by families affected by NCDs is substantial. In Malaysia, chronic conditions among men commonly lead to reduced work capacity and instability in household income (Ministry of Health Malaysia, 2022). Ongoing expenses for medical care and medications stretch household resources and disrupt both immediate and long-term financial plans, often rendering families vulnerable. The financial pressure is not unique to Malaysia; regional evidence from India and Saudi Arabia highlights similar patterns. (Behera & Pradhan, 2021) found that Indian families with a member affected by NCDs spent annual healthcare costs totaling INR 13,170 (approximately MYR 618.99), more than twice that of unaffected families. Costs for diabetic care in Saudi Arabia reached SAR 932 (approximately MYR 1,043.84), with hypertension and hypothyroidism care also incurring substantial out-of-pocket expenses (Almalki et al., 2022). Within Malaysia, out-of-pocket spending is especially high among low-income families, where rising medication prices and limited health coverage intensify financial hardship (Ismail et al., 2024; Ministry of Health Malaysia, 2022).

Faced with increasing pressures, families frequently make difficult choices such as delaying medical care, reallocating household resources, or adopting coping strategies such as borrowing money or liquidating property to pay for treatments. While these actions may provide temporary relief, they often lead to further emotional and financial stress leading to increased overall vulnerability of the family (Abdul Gani, 2025). Children may experience chronic anxiety regarding their father’s health and future, while spouses carry the dual burdens of caregiving and managing household stability, sometimes undertaking additional employment to keep pace with expenses. Research also shows that wives of men with chronic illnesses face elevated levels of depression, anxiety, and relationship stress, as uncertainty about the future and high caregiving demands persist (Umrigar & Mhaske, 2022). Emotional strain and societal expectations often lead caregivers to neglect their own well-being, and the psychological toll of caregiving can even impact patient outcomes. Studies show that elevated caregiver stress is associated with increased mortality for care recipients, emphasizing the vital role of psychological support and family-focused interventions (Zhao et al., 2021).

Despite increasing recognition of these burdens, current health strategies often focus on the individual, overlooking the broader family consequences and support needs. To effectively address NCDs in men, interventions and educational efforts must be tailored to reflect men lived realities, promoting healthier habits, earlier health-seeking, and supportive societal norms.

This narrative review seeks to identify and critically examine the unique challenges posed by NCDs among Malaysian men, focusing on their family-level impacts—financial, emotional, and caregiving. By illuminating the interconnectedness of men’s health and family wellbeing, the review advocates for comprehensive, gender-sensitive public health strategies that strengthen support systems and foster resilient, healthier communities.

METHODS

This narrative review identifies and analyzes literatures on non-communicable diseases (NCDs) in men and their impact on family health. A wide range of studies were selected to ensure comprehensive insights and input. Searches were conducted across major databases, including PubMed, Scopus, Google Scholar, and Web of Science, known for their extensive collections of peer-reviewed articles and reliable reports. Key search terms were selected to align with the study objectives, including “men’s health,” “non-communicable diseases,” “family health,” “caregiving burden,” “economic impact,” and “Malaysia.” The searches utilized Boolean combinations such as (“men’s health” OR “male health”) AND (“non-communicable diseases” OR “NCDs”) AND (“family health” OR “caregiving burden” OR “economic impact”) AND “Malaysia” to systematically identify relevant studies in each database. This strategy ensured comprehensive coverage, capturing both international research and, importantly, literature specifically relevant to the Malaysian context.

The inclusion criteria adopted in searching for articles includes studies published between 2020 until October 2025 to ensure relevance to recent findings. However, earlier articles were also included when they provided essential context or foundational information. This strategy ensured the review captured both current perspectives and key insights into the topic. Government reports such as those from the National Health and Morbidity Survey (NHMS), National Men's Health Plan of Action Malaysia 2019-2023 and other relevant guidelines which offer valuable data and statistics specific to population health trends and challenges were also included. Publications from global health organizations, like the World Health Organization (WHO) and similar bodies, were also included. By combining these varied resources, the review aimed to present a well-rounded and credible exploration of NCDs in men. Another inclusion criteria for literature selection in this review are studies on adult man (18 years and older) as it aligns with the aims and focus of this review.

Studies focus on women, children, or pediatric NCDs were excluded, as they fall outside the scope of this research. Another exclusion criteria is non-English publications without accessible translations were not included to ensure consistency and accessibility in the analysis.

RESULTS AND DISCUSSION

NCDs such as cardiovascular diseases, diabetes, cancer, and chronic respiratory conditions affects men globally, significantly contributing to morbidity and mortality. Factors like unhealthy lifestyles, occupational risks, and cultural norms discouraging early healthcare-seeking behaviors accounts for the irregular distribution of disease to men more when compared to women. In Malaysia, the rising prevalence of NCDs among men not only strains families but also the healthcare systems, as men’s illnesses often lead to financial instability, increased caregiving responsibilities, and emotional stress. However, health policies often overlooked these family effects, focusing solely on individual treatment. This review aims to highlight the challenges of NCDs in men and their broader impact on family health.

Factors Associated with NCDs in Men

Epidemiological Trend of NCDs among Men

NCDs affecting men are a major concern due to their contribution to morbidity and mortality, with significant effects on families and society. Cardiovascular diseases, diabetes, cancer,

chronic respiratory conditions, and mental health disorders are leading health issues for men globally. NCDs and injuries together account for 86% of all male deaths worldwide (WHO, 2018). Among all NCD-related deaths, cardiovascular diseases rank highest, causing approximately 17.9 million deaths annually, followed by cancers (9.3 million deaths), chronic respiratory diseases (4.1 million deaths), and diabetes including diabetes-related kidney disease (2 million deaths) (WHO, 2023).

In the Americas, NCDs contributed to 5.8 million deaths in 2019, comprising 3 million men and 2.8 million women. The overall global death rate from NCDs is estimated at 411.5 per 100,000 population, with men exhibiting a notably higher rate (482.6 deaths per 100,000) than women (351.6 deaths per 100,000) (Pan American Health Organization, 2021). This epidemiological pattern signifies a clear gender gap: men experience significantly greater NCD-related mortality. Notably, men are 75% more likely to die from ischemic heart diseases than women, and 36% of male deaths are considered preventable compared to 19% for females (PAHO, n.d.; Pan American Health Organization, 2021).

Regional insights further emphasize hypertension, depression, gastrointestinal disorders, and diabetes as common NCDs among men. For instance, in India, hypertension (31.6%), depression (24.4%), gastrointestinal disorders (18.7%), and diabetes (11.93%) were prevalent among male patients (Sharma et al., 2023). These findings underscore the urgent need for gender-responsive strategies and heightened attention to the impact of NCDs on men.

Transition to the Malaysian Context

In Malaysia, the burden of non-communicable diseases (NCDs) in men is pronounced and reflects global trends. Recent findings from the NHMS 2023 show that 15% of Malaysian men have diabetes, 29% have hypertension, and about 30% have hypercholesterolaemia. Over half of adults are overweight or obese, while 19%—predominantly men—are smokers (Institute for Public Health, 2024). NCDs account for 72% of all premature deaths, impacting working-age men most significantly (Ministry of Health Malaysia, 2024).

The high prevalence is compounded by behavioral risks such as smoking, unhealthy diets, low physical activity, and occupational hazards. Additionally, cultural expectations and delayed health-seeking behaviors contribute to late diagnosis and poorer outcomes (Abdullah et al., 2022; Ministry of Health, 2019; Uwimana et al., 2023). Addressing these issues requires gender-sensitive, locally relevant strategies that focus on prevention, early detection, and tailored public health interventions.

Men's Risk Factors

The rising prevalence of non-communicable diseases (NCDs) among men is strongly influenced by specific risk factors and behaviors which differ in magnitude and pattern from those seen in women. Gender plays an important role, with men often facing distinctive societal roles, behavioral influences, and biological predispositions that elevate their NCD risk (Ministry of Health, 2019).

Major modifiable risk factors include unhealthy diets, tobacco use, excessive alcohol consumption, and physical inactivity. Notably, men tend to fare worse than women across all these domains (Ministry of Health, 2019). In Malaysia, national data underscore persistently high-risk factor prevalence among men. The National Men's Health Plan of Action 2018–2023 reports that 46.6% of men are overweight or obese, 41.4% smoke, and fewer than 6% meet fruit

and vegetable intake recommendations where all significantly worse than rates compared to women (Ministry of Health, 2019). Notably, males are 26.7 times more likely to smoke and 5.1 times more likely to consume alcohol than women (Cheah Yk, 2014), with approximately 4.8 million male smokers identified in the NHMS 2019 (Wiki Impact, 2021). For example, research in Canada showed that over 60% of men reported unhealthy diets, and nearly 70% had poor eating habits, often linked to socioeconomic status and household composition (Kasabwala et al., 2020). In Malaysia, similar challenges were found with nearly half (48.9%) of men do not achieve the WHO-recommended 150 minutes of moderate exercise per week, reflecting significant gaps in physical activity (Kasabwala et al., 2020).

These high-risk behaviors are significantly influenced by cultural perceptions of masculinity, linking smoking and alcohol use to toughness and risk-taking, which creates barriers to health promotion efforts (Wiki Impact, 2021). Geographic and socioeconomic disparities further complicate prevention efforts, with higher smoking rates observed in states such as Kedah, Sabah, and Terengganu, often correlating with lower education and income levels (Cheah Yk, 2014; Wiki Impact, 2021). These risk behaviors are not only present but also deeply embedded in social and cultural expectations. For example, smoking rates among men are substantially higher, partly influenced by notions of masculinity associated with toughness, risk-taking, and emotional restraint. Men are more likely to start smoking at a younger age and typically consume more cigarettes and inhale more deeply compared to women. This pattern reflects both peer influence and social identity, though more research is needed to clarify the impact of inhalation depth on health risk (Flandorfer et al., 2021).

Similarly, alcohol consumption among men is shaped by cultural norms, serving as a means of social bonding, stress relief, and coping with life challenges like fatherhood or employment pressures (Dimova et al., 2022). These shared habits contribute to increased NCD risk profiles for men.

Turning to the Malaysian context, the NHMS 2023 reports that 2.5% of adults suffer from four major NCDs which are diabetes, hypertension, high cholesterol, and obesity, while 2.3 million adults live with at least three such conditions (Institute for Public Health, 2024). This clustering of NCDs greatly increases the risk of severe cardiovascular outcomes, including heart disease and stroke, especially among men (Institute for Public Health, 2024). Key contributors to these burdens include cardiovascular diseases, colorectal cancer, and lung cancer, which are intimately associated with risk factors such as hypertension, diabetes, dyslipidemia, smoking, poor diet, excessive alcohol, and insufficient physical activity (Ministry of Health, 2019). These lifestyle and behavioral patterns, paired together with lower rates of healthcare utilization and delayed health-seeking, contributes to high NCD prevalence among Malaysian men.

In summary, the combination of behavioral, social, and biological factors underscores why men remain particularly vulnerable to NCDs in Malaysia. Recognizing and targeting these modifiable risk factors through early intervention, education, and gender-specific strategies are essential for reducing the NCD burden and improving population health outcomes.

Socioeconomic Factors

In Malaysia, the prevalence of NCDs among men is heavily influenced by socioeconomic, cultural, and behavioral factors, which directly and indirectly impact health outcomes. Local studies show that variables such as job type, education level, income, and access to healthcare

play a significant role in determining how men manage NCD risk (Ithnin et al., 2021). For instance, low socioeconomic status is linked to increased mortality, with health-related behaviors accounting for less than one-fourth of these associations (Khalatbari-Soltani et al., 2020).

Furthermore, urban men often possess more health knowledge but may struggle to adopt healthy practices, whereas rural men tend to have better health attitudes but face challenges due to limited resources (Ithnin et al., 2021). These urban–rural differences underline the need for tailored interventions that target the specific circumstances of each group.

Additionally, health-seeking behavior in Malaysian men is shaped by factors such as income, education, employment status, and access to healthcare. Higher income and private insurance increase the likelihood of seeking timely treatment, while better education improves health literacy and proactivity. Conversely, lack of paid sick leave or limited healthcare resources can deter men from seeking care when needed (Abdullah et al., 2022; Ithnin et al., 2021). Both studies highlight that socioeconomic barriers persist in both urban and rural settings, emphasizing the need for comprehensive and equity-focused public health strategies.

Cultural and Societal Factors

Cultural and social influences significantly affect men's healthcare usage, often resulting in lower healthcare utilization compared to women. Social expectations around masculinity frequently lead men to avoid preventive care and delay seeking help for health issues (Grau Grau et al., 2022). Men may feel pressured to appear strong and self-reliant, which can cause them to neglect early signs of illness and postpone medical visits for serious conditions such as heart attacks or strokes.

In traditional context of masculinity, as highlighted by (Mokua et al., 2024), men may feel discouraged from seeking healthcare and addressing symptoms, perceiving such conditions as minor or believing it's a "real man's" responsibility to manage health independently. These behaviors are further reinforced by societal expectations, education, and personal attitudes towards health (Ministry of Health, 2019). Societal perceptions of masculinity such as associating risk-taking with strength directly contributes to unhealthy behaviors, including smoking, substance use, and risky sexual practices (Courtenay, 2000).

For behavioral factors, men adopt risk-taking habits such as poor diet, tobacco smoking, and excessive alcohol consumption, all of which elevate their likelihood of developing NCDs (Kasabwala et al., 2020; Ministry of Health, 2019). Men who view health problems as non-serious, or believe they can handle them independently, are less likely to seek medical care leading to lower healthcare utilization and poorer outcomes (Abdullah et al., 2022).

Societal expectations of men as providers and role models also create unique stresses, sometimes preventing men from accessing essential services, including sexual health (Young et al., 2024). Collectively, cultural, social, and behavioral factors underlie many of the disparities observed in NCD prevalence and men's health-seeking behavior in Malaysia. It is important to recognize that these influences including socioeconomic, cultural, and behavioral factors differ from those affecting women and require tailored intervention strategies for effective NCD management in men. A gender-sensitive approach is needed, accounting for societal pressures and unique male health attributes, to guide public health policies and interventions. Factors associated with NCDs in men are summarized in Table 1.

Table 1: Summary Factors Associated with NCDs in Men

FACTORS	DETAILS	FINDINGS	AUTHOR
Men's Risk Factor	High-risk behaviors: poor diet, physical inactivity, tobacco use, alcohol	High prevalence of overweight/obesity (46.6%), smoking (41.4%), <6% meet fruit/veg guidelines. Poor diet, inactivity, and smoking together drive higher rates of CVD, diabetes, and cancer among Malaysian men.	(Ministry of Health, 2019; Wiki Impact, 2021)
	Socio-demographic & state disparities in risk behaviors	Men in certain states (Kedah, Sabah, Terengganu) show higher smoking prevalence; risk behaviors more common among men with lower income/education levels	(Cheah Yk, 2014; Wiki Impact, 2021)
	Physical inactivity	48.9% of men do not meet recommended activity levels; inactivity and poor diet remain major modifiable contributors to NCD development among men.	(Kasabwala et al., 2020)
Socioeconomic factor	Income, education, employment, healthcare access, urban/rural difference	Low socioeconomic status (SES), education, job type, access, and resources are linked to poor health behaviors and less preventive care; rural men face resource challenges, urban men have more knowledge but less action.	(Ithnin et al., 2021; Khalatbari-Soltani et al., 2020)
	Healthcare utilization & private insurance	Men with higher income, private insurance, and education are more likely to seek care and proactively manage NCD risk, while those with lower SES face more barriers and delayed care.	(Abdullah et al., 2022; Ithnin et al., 2021)

	Occupation	Lack of paid sick leave and limited healthcare access discourage some men from seeking timely medical care.	Abdullah et al., 2022
Cultural and societal factor	Masculinity, social/cultural norms, role as provider, health beliefs	Masculinity discourages preventive care, favors risk-taking and unhealthy behaviors (smoking, alcohol, substance use, risky sex). Men are less likely to seek care, viewing health issues as manageable or non-serious, and are hindered by "provider" pressures.	(Abdullah et al., 2022; Courtenay, 2000; Grau Grau et al., 2022; Mokua et al., 2024; Wiki Impact, 2021; Young et al., 2024)

Impact and Challenges

Impact towards Family Health

Men's health within the family context has vital implications especially in economic stability, emotional wellbeing, and caregiving dynamics. In Malaysia, when men with NCDs, their illness can impose significant out-of-pocket expenditure (OOPE) for healthcare affecting the family financial status. For example, most outpatient visits (61.5%) are paid for by OOPE, with only 18.2% covered by insurance (Institute for Public Health, 2024). This reliance places a heavy financial strain on households, forcing some families to compromise on other essential needs, such as education or housing.

For families with limited income, these expenses can be catastrophic. Coping mechanisms such as using personal savings, relying on family support, or borrowing money reflects the immense financial stress father or husband's illness can cause, sometimes pushing families into poverty (Mehak & Rajesh, 2023; Okoronkwo et al., 2016). Disrupted financial status undermines family security and long-term planning, while insufficient financial protection intensifies household vulnerability to hardship.

Beyond economics, men's health struggles often increase the burden on family members who must provide care for a husband or father with chronic disease. This includes not only managing medications, hospital appointments, and finances, but also dealing with the ongoing stress of the patient's ill health. Caregivers frequently spouses or adult children—report higher rates of anxiety, depression, isolation, and family conflict as the demands of care grow (Kang et al., 2020; Li et al., 2021; Mirhosseini et al., 2021; Umrigar & Mhaske, 2022). Over time, these stresses risk eroding family bonds and weakening overall emotional resilience.

Caregivers may become overburdened or burn out in the absence of sufficient support, such as financial aid, mental health services, or respite care. While some safety nets exist such as Malaysian tax relief up to RM6,000 for families managing disability or long-term illness by LHDN (LHDN, 2025), a stronger caregiver and patient support is urgently needed to protect families. Ultimately, addressing NCD burden in Malaysian men requires policies and programs that reflect the central role of men in family life and actively bolster the entire support system that cares for them.

Impact on Healthcare System

One of the core challenges for men's health in Malaysia is the limited availability of gender-sensitive healthcare services. Most healthcare systems utilize a generalized, "one-size-fits-all" approach, which fails to address the unique needs, risk factors, and health-seeking behaviors of men. For instance, screening programs, counseling, and outreach campaigns often do not tailor interventions or environments specifically for male patients, which reduces uptake and effectiveness. In contrast, research from Kelantan shows that men value primary care that is male-friendly, emphasizes comfort, and respects their preferences which such service model can enhance engagement and outcomes (Ab Aziz et al., 2022).

Stigma and cultural norms continue to discourage men from seeking timely healthcare. Men are less likely to access health services, as this conflicts with expectations of masculinity centered on toughness, self-reliance, and invulnerability (Leone et al., 2021). As a result, symptoms are often ignored until conditions become worsened, leading to late-stage diagnosis,

advanced disease, poorer prognosis, and increased system costs (Husted et al., 2022). Men reluctant to seek support for mental health or preventive care due to fear of stigma or being judged are more likely to present with advanced physical or psychological concerns (Abdullah et al., 2022; Eggenberger et al., 2021). This tendency amplifies NCD burden and increases overall pressure on healthcare resources, as treatable diseases progress unnecessarily.

Policy and system gaps further impede progress in addressing this NCDs among men. Many interventions remain gender-neutral, which fail to acknowledge men's unique occupational hazards, mental health challenges, and dominant NCD risk factors such as smoking, diet, and inactivity (Institute for Public Health, 2024; Ministry of Health, 2019; Sivanantham et al., 2021). Public health strategy must move beyond generic goals and integrate research and practice that are gender-responsive and context-specific.

Studies show that gender-focused health approaches not only improve men's engagement with services but can also enhance overall health outcomes and reduce long-term costs (Abualhaija, 2022; Seidler et al., 2024; Sunki Kim & Soyoung Yu, 2023). For example, activities like tailored communication, mental health education, and increasing male participation in reproductive health and self-care programs are critical for population-level NCD prevention (Narasimhan et al., 2021).

These gaps highlight the urgent need for coordinated gender-sensitive reforms in men's healthcare. Addressing the limitations of a generalized approach, combating stigma, and tackling social and behavioral barriers are essential prerequisites for improving men's health outcomes in Malaysia.

Proposed Strategies for Intervention of NCDs in Men

Improving the health of Malaysian men and reducing non-communicable diseases (NCDs) requires interventions that reflect the realities of men's risk profiles and societal roles. Gender-sensitive design in healthcare is important in developing male-friendly clinics with targeted screenings, extended service hours, approachable staff, and comfortable environments can improve men's engagement. Such approaches reduce barriers to care and align service delivery with men's preferences, as supported by the National Men's Health Plan of Action and recent primary care studies in Malaysia (Ab Aziz et al., 2022; Ministry of Health, 2019).

Addressing stigma is equally crucial for changing how men interact with the healthcare system. Stigma rooted in traditional masculine ideals discourages men from seeking help, especially for mental health or preventive care. Interventions must include public and workplace campaigns that normalize help-seeking, coupled with confidential and accessible counseling services (Eggenberger et al., 2021; Leone et al., 2021). These efforts support earlier care-seeking and improved long-term health behaviors among Malaysian men.

Evidence-based intervention design should respond directly to the most prevalent local risks for men, such as tobacco use, excessive alcohol consumption, unhealthy diets, physical inactivity, and occupational stressors. Programs must utilize digital tools, health education, workplace wellness initiatives, and community outreach to ensure relevance. Successful initiatives in Malaysia target common male behaviors and environments, supporting healthier choices and sustainable change (Institute for Public Health, 2024; Ministry of Health, 2019).

Effective NCD control also benefits from interdisciplinary and community collaboration. Engaging family members, workplaces, local leaders, and peer networks creates a holistic support system, reinforcing new norms and improving health literacy. Community-based and intersectoral approaches have been particularly effective in rural areas and high-risk groups, enhancing sustainability and reach (Olfiffe et al., 2020).

Socioeconomic barriers remain a significant challenge, with men of lower income or from rural background facing greater obstacles to timely diagnosis and treatment. Policy solutions must include simplified healthcare navigation, direct subsidies, expanded insurance coverage, and outreach that specifically prioritizes vulnerable men. Concrete examples include reduced clinic fees, transportation support, and subsidized screenings for at-risk males (Bezzina et al., 2024; Bidmead et al., 2023; Chapman et al., 2020).

Finally, for long-term sustainability, policies and research must routinely integrate a men's health perspective. National frameworks should fund and monitor gender-sensitive mental and physical health initiatives, while supporting ongoing studies to refine and adapt interventions for Malaysian men. Scaling up these efforts is aligned with national policy, as many NCD complications and deaths among men are preventable with early, gender-targeted action (Ministry of Health, 2019; Seidler et al., 2024; Sunki Kim & Soyoung Yu, 2023).

By grounding intervention strategies in evidence, tailored delivery, and the realities faced by Malaysian men, the health system can achieve meaningful progress in reducing NCD burdens and supporting both men and their families.

CONCLUSION

NCDs poses significant health and economic challenges for men, impacting their well-being and family stability. Barriers such as stigma, societal norms, and limited access to tailored healthcare contributed to the delayed diagnoses and poor outcomes. Unhealthy lifestyles like poor diets, smoking, and inactivity worsen the burden. Addressing these issues requires targeted education, gender-sensitive services, mental health support, and preventive programs. Community engagement, technology, and inter-sectoral collaboration are also key to reducing stigma and promoting healthier behaviors among men thus reducing NCDs. These strategies can improve outcomes and ease the economic strain on households and healthcare systems.

Acknowledgement

The authors would like to express their sincere appreciation to the Department of Public Health, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, for the academic support and conducive environment provided during the preparation of this manuscript.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Funding

This study received no external funding.

REFERENCES

- Ab Aziz, M. Z., Tengku Ismail, T. A., Ibrahim, M. I., Yaacob, N. M., & Mohd Said, Z. (2022). Experiences and Expectations of the Characteristics of Friendly Primary Health Services from the Perspective of Men: A Phenomenological Qualitative Study. *International Journal of Environmental Research and Public Health*, 19(19), 12428. <https://doi.org/10.3390/ijerph191912428>
- Abdul Gani, S. M. (2025). Determinants of distress financing for healthcare service utilization: A convergent mixed-method study at a tertiary hospital in Malaysia. <https://doi.org/10.1093/heapol/czaf034>
- Abdullah, N. N., Mohd Arsat, M. H., Aziz, N. R. A., & Al-Kubaisy, W. (2022). Men Health Seeking Behaviour: A literature review. *Environment-Behaviour Proceedings Journal*, 7(20), 247–254. <https://doi.org/10.21834/ebpj.v7i20.3484>
- Abualhaija, N. (2022). Men's health disparities: Causes and interventions. *Nursing Forum*, 57(5), 785–792. <https://doi.org/10.1111/nuf.12764>
- Almalki, Z. S., Alahmari, A. K., Alqahtani, N., Alzarea, A. I., Alshehri, A. M., Alruwaybiah, A. M., Alanazi, B. A., Alqahtani, A. M., & Ahmed, N. J. (2022). Households' Direct Economic Burden Associated with Chronic Non-Communicable Diseases in Saudi Arabia. *International Journal of Environmental Research and Public Health*, 19(15), 9736. <https://doi.org/10.3390/ijerph19159736>
- Behera, S., & Pradhan, J. (2021). Uneven economic burden of non-communicable diseases among Indian households: A comparative analysis. *PLOS ONE*, 16(12), e0260628. <https://doi.org/10.1371/journal.pone.0260628>
- Bezzina, A., Clarke, E. D., Ashton, L., Watson, T., & James, C. L. (2024). Workplace Health Promotion Programs Targeting Smoking, Nutrition, Physical Activity, and Obesity in Men: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Health Education & Behavior*, 51(1), 113–127. <https://doi.org/10.1177/10901981231208396>
- Bidmead, E., Hayes, L., Leggott, E., Wildman, J., Rankin, J., Bramhall, L., Todd, L., & Mazzoli-Smith, L. (2023). Poverty Proofing health care: A qualitative study of barriers to accessing health care for low income families with children in Northern England. *Public and Global Health*. <https://doi.org/10.1101/2023.10.04.23296541>
- Chapman, E., Haby, M. M., Toma, T. S., De Bortoli, M. C., Illanes, E., Oliveros, M. J., & Barreto, J. O. M. (2020). Knowledge translation strategies for dissemination with a focus on healthcare recipients: An overview of systematic reviews. *Implementation Science*, 15(1), 14. <https://doi.org/10.1186/s13012-020-0974-3>
- Cheah Yk. (2014). The Socio-demographic Determinants of Smoking and Alcohol Consumption: A Cross Sectional Study in Penang, Malaysia. <https://www.medicineandhealthukm.com/sites/default/files/article/2014/07-MS0016-%20Proof%20%2862-73%29.pdf>
- Courtenay, W. H. (2000). Constructions of masculinity and their influence on men's well-being: A theory of gender and health. [https://doi.org/10.1016/S0277-9536\(99\)00390-1](https://doi.org/10.1016/S0277-9536(99)00390-1)
- Dimova, E. D., McGarry, J., McAloney-Kocaman, K., & Emslie, C. (2022). Exploring men's alcohol consumption in the context of becoming a father: A scoping review. *Drugs: Education, Prevention and Policy*, 29(6), 643–654. <https://doi.org/10.1080/09687637.2021.1951669>
- Eggenberger, L., Fordschmid, C., Ludwig, C., Weber, S., Grub, J., Komlenac, N., & Walther, A. (2021). Men's Psychotherapy Use, Male Role Norms, and Male-Typical Depression

- Symptoms: Examining 716 Men and Women Experiencing Psychological Distress. *Behavioral Sciences*, 11(6), 83. <https://doi.org/10.3390/bs11060083>
- Flandorfer, P., Wegner, C., & Buber, I. (2021). Gender Roles and Smoking Behaviour. *Institut Für Demographie - VID*, 1, 1–25. <https://doi.org/10.1553/0x003d08ea>
- Grau Grau, M., Las Heras Maestro, M., & Riley Bowles, H. (Eds.). (2022). *Engaged Fatherhood for Men, Families and Gender Equality: Healthcare, Social Policy, and Work Perspectives*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-75645-1>
- Hossin, M. Z. (2021). The male disadvantage in life expectancy: Can we close the gender gap? *International Health*, 13(5), 482–484. <https://doi.org/10.1093/inthealth/ihaa106>
- Husted, M., Gray, D., Golding, S. E., & Hindley, R. (2022). Reaching a Tipping Point: A Qualitative Exploration of Quality of Life and Treatment Decision-Making in People Living With Benign Prostatic Hyperplasia. *Qualitative Health Research*, 32(13), 1979–1992. <https://doi.org/10.1177/10497323221129262>
- Institute for Public Health. (2024). National Health and Morbidity Survey (NHMS) 2023. <https://iku.nih.gov.my/images/nhms2023/key-findings-nhms-2023.pdf>
- Isamail, N., Said, R., Office of Deputy Dean (Thesis, Student Affairs and Media), School of Graduate Studies, Universiti Putra Malaysia, Selangor, Malaysia, Ismail, N. W., Office of Deputy Dean (Research, Funding, Corporate and Community Linkages), UPM School of Business and Economics, Selangor, Malaysia, Haron, S. A., & Department of Resource Management and Consumer Studies, Faculty of Human Ecology, Universiti Putra Malaysia, Selangor, Malaysia. (2024). Non-Communicable Diseases Impact Low-Income Households in Malaysia. *Malaysian Journal of Medical Sciences*, 31(1), 124–139. <https://doi.org/10.21315/mjms2024.31.1.11>
- Ithnin, M., Mohamad Nor, N., ‘Ayn U., Juliana, N., Mohd Effendy, N., Sahar, M. A., Abang Abdullah, K. H., Mohd Aris, M. S., & Mohd Rani, M. D. (2021). Knowledge, attitudes and practices on risk factors of non-communicable diseases (NCDs): A cross-sectional survey among urban and rural adults in Negeri Sembilan, Malaysia. *International Journal of Health Promotion and Education*, 59(4), 236–246. <https://doi.org/10.1080/14635240.2020.1749526>
- Kang, S.-G., Song, S.-W., Kim, S.-H., Kang, Y.-J., Kim, Y.-R., & Eun, Y. (2020). Fatigue and Mental Status of Caregivers of Severely Chronically Ill Patients. *Pain Research and Management*, 2020, 1–6. <https://doi.org/10.1155/2020/6372857>
- Kasabwala, K., Flannigan, R., Punjani, N., Black, N., & Goldenberg, S. L. (2020). National Classification of Diet and Exercise Behaviours: How Healthy are Canadian Men? *The Health & Fitness Journal of Canada*, 16-29 Pages. <https://doi.org/10.14288/HFJC.V13I2.306>
- Khalatbari-Soltani, S., Blyth, F. M., Naganathan, V., Handelsman, D. J., Le Couteur, D. G., Seibel, M. J., Waite, L. M., Cvejic, E., & Cumming, R. G. (2020). Socioeconomic status, health-related behaviours, and death among older people: The Concord health and aging in men project prospective cohort study. *BMC Geriatrics*, 20(1), 261. <https://doi.org/10.1186/s12877-020-01648-y>
- Leone, J. E., Rovito, M. J., Gray, K. A., & Mallo, R. (2021). Practical Strategies for Improving Men’s Health: Maximizing the Patient-Provider Encounter. *International Journal of Men’s Social and Community Health*, 4(1), e1–e16. <https://doi.org/10.22374/ijmsch.v4i1.17>

- LHDN. (2025). Tax Reliefs [Tax Reliefs]. Lembaga Hasil Dalam Negeri Malaysia. <http://www.hasil.gov.my/en/individual/individual-life-cycle/how-to-declare-income/tax-reliefs/>
- Li, L., Wister, A. V., & Mitchell, B. (2021). Social Isolation Among Spousal and Adult-Child Caregivers: Findings From the Canadian Longitudinal Study on Aging. *The Journals of Gerontology: Series B*, 76(7), 1415–1429. <https://doi.org/10.1093/geronb/gbaa197>
- Mehak, N., & Rajesh, S. (2023). A comprehensive examination of the economic impact of out-of-pocket health expenditures in India. *Health Policy and Planning*. <https://doi.org/10.1093/heapol/czad059>
- Ministry of Health. (2019). National Men's Health Plan of Action Malaysia 2018-2023. Family Health Development Division Ministry of Health Malaysia. https://hq.moh.gov.my/bpkk/images/3.Penerbitan/2.Orang_Awam/5.Kesihatan_Dewasa/2.PDF/5Mens_Health_Plan_of_Action_Malaysia.pdf
- Ministry of Health Malaysia. (2022). The Direct Health-care Cost of Noncommunicable Diseases in Malaysia. https://www.moh.gov.my/moh/resources/Penerbitan/Rujukan/NCD/NCD_Laporan/HEALTH-COST_of_NCDs-7a-WEB.pdf
- Ministry of Health Malaysia. (2024). Prevention and control of noncommunicable diseases in Malaysia: The case for investment https://www.moh.gov.my/moh/resources/Penerbitan/Laporan/Umum/NCD_Investment_Case.pdf
- Mirhosseini, S., Bazghaleh, M., Basirinezhad, M., Abbasi, A., & Ebrahimi, H. (2021). Health-related quality of life and caregiver's burden in patients with chronic diseases: A cross-sectional study. *Family Medicine & Primary Care Review*, 23(1), 29–35. <https://doi.org/10.5114/fmPCR.2021.103184>
- Mokua, S. N., Ombogo, L., Mathu, D., Otambo, P., Nyandieka, L., Onteri, S. N., Mbuka, S. J., Kariuki, J., Ahmed, I., Wanjihi, V., Mutai, J., & Bukania, Z. (2024). “For a man to go to hospital, then that would be his last option”: A qualitative study exploring men's experiences, perceptions and healthcare needs in the implementation of Universal Health Coverage in Kenya. *PLOS Global Public Health*, 4(5), e0002925. <https://doi.org/10.1371/journal.pgph.0002925>
- Narasimhan, M., Logie, C. H., Moody, K., Hopkins, J., Montoya, O., & Hardon, A. (2021). The role of self-care interventions on men's health-seeking behaviours to advance their sexual and reproductive health and rights. *Health Research Policy and Systems*, 19(1), 23. <https://doi.org/10.1186/s12961-020-00655-0>
- Ningrum, W. T. P., & Mas'udah, S. (2021). Family conflicts and the violence of unemployed husbands against their wives acting as the main breadwinner. *Jurnal Sosiologi Dialektika*, 16(1), 76. <https://doi.org/10.20473/jsd.v16i1.2021.76-85>
- Okoronkwo, I., Ekpemiro, J., Onwujekwe, O., Nwaneri, A., & Iheanacho, P. (2016). Socioeconomic inequities and payment coping mechanisms used in the treatment of type 2 diabetes mellitus in Nigeria. *Nigerian Journal of Clinical Practice*, 19(1), 104. <https://doi.org/10.4103/1119-3077.173711>
- Oliffe, J. L., Rossnagel, E., Bottorff, J. L., Chambers, S. K., Caperchione, C., & Rice, S. M. (2020). Community-based men's health promotion programs: Eight lessons learnt and their caveats. *Health Promotion International*, 35(5), 1230–1240. <https://doi.org/10.1093/heapro/daz101>

- PAHO. (n.d.). Men's health Pan American Journal of Public Health. The Pan American Journal of Public Health. <https://journal.paho.org/en/special-issues/mens-health>
- Pan American Health Organization. (2021). The burden of noncommunicable diseases in the Region of the Americas, 2000-2019. <https://www.paho.org/en/enlace/burden-noncommunicable-diseases>
- Seidler, Z., Benakovic, R., Wilson, M., McGee, M. A., Fisher, K., Smith, J. A., Oliffe, J., & Sheldrake, M. (2024). Approaches to Engaging Men During Primary Healthcare Encounters: A scoping review. *American Journal of Men's Health*, 18. <https://doi.org/10.1177/15579883241241090>
- Sharma, S. K., Nambiar, D., & Ghosh, A. (2023). Sex differences in non-communicable disease multimorbidity among adults aged 45 years or older in India. *BMJ Open*, 13(3), e067994. <https://doi.org/10.1136/bmjopen-2022-067994>
- Sivanantham, P., Sahoo, J., Lakshminarayanan, S., Bobby, Z., & Kar, S. S. (2021). Profile of risk factors for Non-Communicable Diseases (NCDs) in a highly urbanized district of India: Findings from Puducherry district-wide STEPS Survey, 2019–20. *PLOS ONE*, 16(1), e0245254. <https://doi.org/10.1371/journal.pone.0245254>
- Sunki Kim & Soyoung Yu. (2023). Men's mental health and interventions tailored to masculinity: A scoping review. *Journal of Men's Health*. <https://doi.org/10.22514/jomh.2023.111>
- Umrigar, D. M., & Mhaske, R. (2022). Psychological Health of Wives' of Patients with Chronic Illnesses. *Journal of Psychological Research*, 4(1), 1–7. <https://doi.org/10.30564/jpr.v4i1.3879>
- Uwimana, S., Okova, R., Habtu, M., & Habtu, M. (2023). Factors Influencing the Health Seeking Behaviour of Men in Gasabo District, Rwanda. *Rwanda Journal of Medicine and Health Sciences*, 6(2), 215–227. <https://doi.org/10.4314/rjmhs.v6i2.13>
- WHO. (2018, September 16). Men's health WHO. WHO. <https://www.who.int/europe/news-room/fact-sheets/item/men-s-health>
- WHO. (2023, September 16). Non communicable diseases. <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>
- Wiki Impact. (2021, October 29). Could Toxic Masculinity Be The Undercurrent Behind Social Ills? Wiki Impact. <https://www.wikiimpact.com/could-toxic-masculinity-be-the-undercurrent-behind-social-ills/>
- Young, A. M., Moji, M., Duby, Z., Tenza, S., Atujuna, M., Palanee-Phillips, T., Minnis, A. M., & Montgomery, E. T. (2024). The “Ideal Man”: How Gender Norms and Expectations Shape South African Men's Masculinity, Sexual Identities, and Well-Being. *The Journal of Men's Studies*, 10608265241303734. <https://doi.org/10.1177/10608265241303734>
- Zhang, J., Jin, Y., Jia, P., Li, N., & Zheng, Z.-J. (2021). Global Gender Disparities in Premature Death from Cardiovascular Disease, and Their Associations with Country Capacity for Noncommunicable Disease Prevention and Control. *International Journal of Environmental Research and Public Health*, 18(19), 10389. <https://doi.org/10.3390/ijerph181910389>
- Zhao, J., Zeng, Z., Yu, J., Xu, J., Chen, P., Chen, Y., Li, J., & Ma, Y. (2021). Effect of main family caregiver's anxiety and depression on mortality of patients with moderate-severe stroke. *Scientific Reports*, 11(1), 2747. <https://doi.org/10.1038/s41598-021-81596-8>