Ministry of Health Protocol for the Prevention of Cognitive Impairment

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Introduction:

Dementia is a serious, debilitating condition impacting millions of people globally. It is the seventh leading cause of death and a leading cause of disability worldwide. The impact is not limited to the individual but also extends to their families and caregivers. Currently, there is no cure for dementia, but there are measures that can be taken to lower the risk of its development.

The population pyramid of Saudi Arabia is changing, with the 50–64 age group expanding quickly. Soon, this group will transition into the over 65 category, typically regarded as old age (1). Dementia is a growing public health issue in Saudi Arabia, such as the rest of the world, due to an aging population and lifestyle changes. While we lack population-based epidemiological studies, we expect that Saudi Arabia's statistics would align with global trends. Saudi Arabia is estimated to have an overall dementia prevalence of 5%, with the frequency steadily increasing beyond the age of 65.

The increasing prevalence of risk factors for dementia, such as obesity, sedentary lifestyle, diabetes, and hypertension, underscores the importance of promoting healthy lifestyles. There is also a need to increase awareness about the condition itself. Many individuals in Saudi Arabia may lack an understanding of dementia, its impact on patients and their families, and the fact that 40% of dementia cases can be prevented (1). Hence, it is crucial to develop a protocol for dementia prevention in Saudi Arabia.

Purpose:

The protocol can offer tailored recommendations for individuals in Saudi Arabia concerning risk factors specific to the local context. It can also enhance understanding of the condition, decrease stigma, and motivate people to seek medical help if they experience symptoms.

Guidelines promoting early detection and appropriate interventions can enhance outcomes for dementia patients. It is important to note that some risk factors, including age, gender, genetics, race, and family history of dementia, are nonmodifiable. These guidelines will focus on modifiable risk factors.

Targeted Audience:

This protocol is intended to guide general practitioners and physicians in managing high-risk populations of dementia.

Aim & Scope:

The protocol is intended to standardize the practice and promote screening, early detection & management of dementia risk factors through a series of evidence-based recommendations among different healthcare providers; this will be reflected in delaying cognitive decline and dementia. These guidelines include healthy lifestyle recommendations and health promotion advice.

Protocol Development Process:

A team of experts in high-risk population specialties, including geriatricians, cognitive behavioral neurologists, psychiatrists, and endocrinologists, convened to review the global literature on dementia risk factors. The team had several tasks, including scanning literature, identifying best

practices and guidelines for managing risk factors related to dementia, writing the protocol, and reviewing the final draft of the protocol.

Unfortunately, specific information on dementia risk factors in the Saudi population is unavailable. However, it is presumed that these risk factors align with those recognized globally. Therefore, experts relied on the available data in the peer-reviewed literature, published clinical guidelines, and best practices. The team used a narrative review to comprehensively search for all available and current data related to dementia risk factors. Prior to the search task, experts agreed on the types and sources of materials from which information was gathered. All team members participated in writing and reviewing the protocol. Experts synthesized the information into multiple subcategories: *Targeted Population, Cognitive Impairment Screening, Modifiable Risk Factors for Dementia, and Recommendations to Mitigate Risk Factors for Dementia.*

The protocol focuses on addressing the prevalent global dementia risk factors in Saudi Arabia. The World Alzheimer Report 2014 (2), the UK National Institute of Health and Care Excellence (2015), the US Agency for Healthcare Research and Quality's systematic review (3,4), and the Lancet Commission's Dementia Prevention, Intervention, and Care: 2020 report were all used to determine the risk factors.

Updating:
This protocol was created in November 2023. The protocol will be updated every two years or if any changes or updates are released by national, regional, and international guidelines, reports, and/or Ministry of Health formulary.

Conflict of Interest:
This protocol was developed based on valid scientific evidence. Experts involved in developing this protocol have no conflicts of interest to declare.

Funding:
None.

Disclaimer:
This protocol is an evidence-based decision-making tool for managing health conditions. It is based on the best information that is available at the time of writing and is to be updated regularly. This protocol is not intended to be followed as a rigid treatment protocol. It is also not meant to replace the clinical judgment of practicing health practitioners. It is only a tool to help in identifying and managing risk factors related to dementia, potentially preventing and/or delaying cognitive decline and dementia. Treatment decisions must always be made on an individual basis, and health practitioners must customize care and tailor treatment regimens to patients' unique situations and health histories.

Targeted Population:
Geriatric patients who had a medical history of dementia and/or showed signs of cognitive decline.

Cognitive Impairment Screening:

There is no evidence supporting the screening of asymptomatic older adults for cognitive impairment (5). However, every patient reporting potential cognitive symptoms deserves a baseline assessment. Testing for cognitive impairment in our population presents several challenges: we lack validated, detailed neuropsychological and cognitive assessment tools, along with their normative values. However, in recent years, significant efforts have been made to translate and validate internationally recognized tools such as:

- Mini-Mental State Exam (MMSE).
- Montreal Cognitive Assessment (MoCA).
- Consortium to Establish a Registry for Alzheimer's Disease (CERAD) Neuropsychological Battery.
- Saudi version of the Neuropsychiatric Inventory (SNPI).
- Arabic Bristol Activity of Daily Living Scale (Arabic BADL) (6–9).
- Mini-cog Cognitive Impairment Screening Tool.
- General Practitioner Assessment of Cognition (GPCOG) (10,11).

The MMSE is a 30-point questionnaire that is simple to administer and excellent as a screening tool. The limitation of MMSE is that it does not thoroughly assess visuospatial, executive function, and attention domains, as it primarily concentrates on memory and orientation. Alternatively, MoCA, also a 30-point questionnaire, explores more cognitive domains than MMSE. Another disadvantage of MMSE is its copyright restrictions, requiring permission for both clinical and research uses. In contrast, MoCA only requires permission for research purposes. Furthermore, Mini-cog and GPCOG are validated tools for screening cognitive impairment and are available in the Arabic language (10,11). Serial longitudinal testing and tracking one's performance trajectory are particularly useful to assess mild cognitive impairment, given the absence of validated tools and normative values in the Saudi population.

Modifiable Risk Factors for Dementia

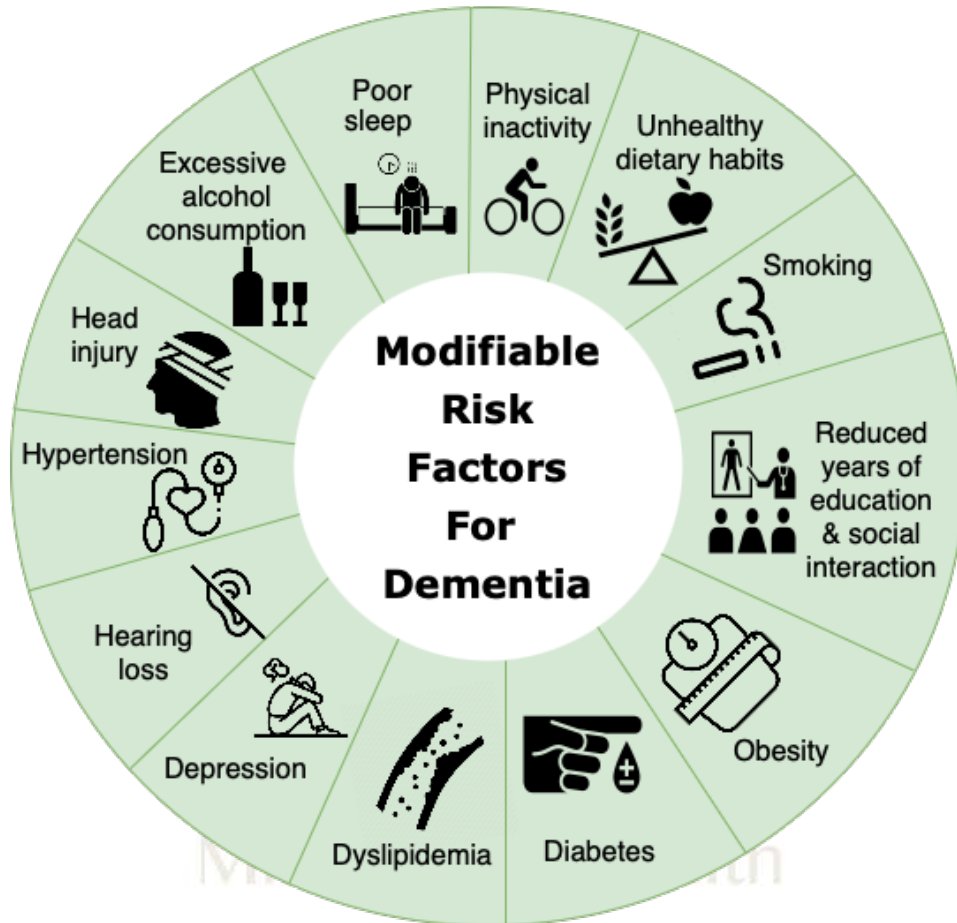Several modifiable risk factors for dementia were identified (Figure. 1). Each risk factor is discussed below.

This figure was designed and created by the team involved in developing this protocol.

1. **Physical inactivity:**

Exercise enhances mental health, reduces the risk of dementia, and protects against Alzheimer's disease. This may be due to a direct impact on brain anatomy or an indirect effect via other risk factors. Studies in Saudi Arabia have revealed that sedentary behavior and lack of physical activity are national concerns. Approximately 50%–95% of adults in Saudi Arabia engage in insufficient physical activity, with about 60% of middle-aged Saudi males being physically inactive.

2. **Poor dietary lifestyle:**

The connection between diet and health is widely recognized but not clearly defined. Studying various dietary interventions is challenging due to the dynamic nature of people's diets over time and

the difficulty in tracking or controlling them in a laboratory setting. Most studies investigating the impact of diet on brain health rely on subjects' self-reports (12).

Research and interest are now focusing on entire diets (such as the Mediterranean and Nordic diets) rather than single nutrients (such as omega 3 and vitamin B). A healthy and Mediterranean diet can lower the risk of dementia in individuals with cardiovascular risk factors, which may be an indirect effect (13). Research also discovered that adhering to a strict Mediterranean diet reduces the risk of dementia.

Only a minor percentage of the Saudi population adheres to international dietary recommendations. The Saudi population's consumption of fruits and vegetables, which is the staple of the Mediterranean and other healthy diets, is low. Meanwhile, the intake of processed food and high-sugar beverages is high among the young population (14).

3. Smoking:

The health impacts of smoking are increasingly becoming a global issue, including in Saudi Arabia. The risk of dementia increases with smoking (15). Over the past decade, the percentage of Saudi Arabians who smoke has risen from 12.2% in 2005 to 15.3% in 2013 (16). Another issue is shisha smoking, with 4.1% of participants in a 2013 study reporting daily use (16). The WHO estimates that the age-standardized prevalence of smoking in 2019 was 14.4% among individuals aged 15 years or older. Quitting smoking is proven to significantly lower the risk of dementia, which is associated with increased smoking (17).

While long-term research on the connection between vaping and dementia risk is limited, preliminary findings indicate that vaping could affect memory and cognitive functions. The American Heart Association has repeatedly warned against electronic cigarettes, linking them to various heart-related issues. Evidence links vaping and electronic cigarettes to negative long-term health impacts, including but not limited to lung cancer (18). Vaping could pose a risk worth investigating, given that dementia is a chronic disease with symptoms that take years to appear, and cardiovascular risk factors significantly contribute to dementia risk.

4. Reduced years of education and limited social interaction:

The higher the years of education, the lower the risk of developing dementia in later life (19,20). It is observed that ongoing cognitive stimulation through activities such as reading, writing, learning languages, art, board games, and social activity can help reduce the risk of dementia later in life (21,22). The literature lacks sufficient evidence to recommend a specific cognitive training program.

Education in Saudi Arabia is compulsory and free for ages 6–15 years. The government's relentless efforts to eradicate illiteracy have led to a continuous decline, with the prevalence dropping to 3.7% in 2021 compared to 6.8% in 2013.

Social interaction acts as a protective factor against dementia. Marriage, family interaction, maintaining friendships, and community involvement have been found to directly reduce the risk of

dementia in individuals over 65 years of age. One study found that individuals scoring high on various social interaction measures (marital status, socializing, family support, friendships, and community group participation) were 46% less likely to develop dementia (23).

5. Obesity:

Midlife obesity, a rising global issue, is associated with late-life dementia (24). Unfortunately, the obesity rate in Saudi Arabia is approximately 35.6%, exceeding the global average (25).

Weight loss can enhance cognitive performance directly and indirectly by improving metabolic risk factors like blood pressure, lipid profile, and blood sugar level. However, there is insufficient evidence to determine if pharmacological interventions can yield the same beneficial outcomes.

6. Diabetes:

According to the WHO, Saudi Arabia ranks second in the Middle East and seventh worldwide for diabetes rates. It is estimated that approximately 7 million people have diabetes and nearly 3 million have prediabetes. One-quarter of the adult population suffers from diabetes, a figure expected to more than double by 2030. The most alarming observation is the nearly tenfold increase in diabetes incidence over the past thirty years in Saudi Arabia.

Diabetes mellitus is widely recognized for its comorbidity with cognitive dysfunction. The incidence and symptoms of cognitive decline typically correlate with the age of diagnosis and type of diabetes. However, there is limited evidence linking the level of A1c with the development of cognitive impairment and dementia (6). The mechanisms through which diabetes causes cognitive impairment are not fully understood.

The Memory in Diabetes (MIND) sub-study, part of the Action to Control Cardiovascular Risk in Diabetes (ACCORD) study, investigated the impact of tight glycemic control (HbA1c < 6) on cognitive function and found no significant improvement (26).

7. Dyslipidemia:

Dyslipidemia is an established risk factor for cardiovascular diseases and various types of dementias. Cholesterol may play a role in the development of dementia and Alzheimer's disease; thus, managing dyslipidemia is recommended as a preventive measure. The exact mechanisms through which dyslipidemia exerts its effects remain unclear (27).

Lifestyle modification is the primary method for improving cholesterol levels. Numerous studies have shown an enhancement in cognitive dysfunction in dementia patients by targeting modifiable cardiovascular risk factors (28). Given that vascular dementia is the second leading cause of dementia, it is appropriate to treat patients with vascular risk factors who qualify for lipid-lowering therapy. However, there's no evidence to suggest statins are superior to other lipid-lowering therapies in preventing vascular dementia (29).

8. Hypertension:

Midlife hypertension, typically defined as starting around age 40, is associated with a higher risk of late-life dementia. Individuals with ideal cardiovascular risk factors, including optimal blood pressure less than 120/80, had a reduced 10-year risk of all-cause dementia, as per The Framingham Heart Study (FHS) Offspring (OS) Cohort. The Systolic Blood Pressure Intervention Trial - Memory and Cognition in Decreased Hypertension (SPRINT MIND) trial demonstrated that individuals with intensive Systolic Blood Pressure (SBP) control (less than 120) had a reduced risk of mild cognitive impairment or dementia compared to those with SBP control (140 or above).

Hypertension is prevalent among the Saudi population. One study estimated that 21.8% of Saudi women suffer from hypertension (30). Another study examining hypertension prevalence in Saudi Arabia's western region found that 39.5% of subjects had undiagnosed stage I hypertension, and 17.2% had undiagnosed stage II hypertension. Stage I was defined as a SBP between 130–139 mm Hg or a Diastolic Blood Pressure (DBP) between 80–89 mm Hg. Stage II was defined as an SBP of at least 140 mm Hg or a DBP of at least 90 mm Hg.

Efforts to prevent hypertension at a population level should involve promoting lifestyle modifications should be available to all adults with high blood pressure. However, there is no evidence that a particular class of antihypertensive is superior to others for dementia prevention.

9. **Depression:**

Several mechanisms have been proposed associating depression with dementia. Depression may be a component of the prodrome and initial stages of dementia. It is not entirely clear whether depression causes dementia, or if depressive symptoms result from dementia neuropathology that occurs years before clinical dementia onset. Cognitive impairment, formerly referred to as pseudodementia, can be the primary symptom of depression among older adults.

Depression in midlife and late-life is more likely associated with dementia. No studies suggest that early-age depression is linked to later-life dementia development. Treatment of depression, primarily with selective serotonin reuptake inhibitors, is suggested to clinically delay the progression to Alzheimer's disease dementia by over 4 years.

In older adults with normal cognition or mild cognitive decline, who do not exhibit depressive features, there is no evidence to support the use of depression treatment (pharmacological or nonpharmacological) (31). In older adults, with either normal cognition or mild cognitive impairment, treating depression effectively reduces the risk of cognitive decline or dementia.

10. **Hearing loss:**

Age-related hearing loss, prevalent in the elderly population, is associated with an increased risk of dementia for each decibel (dB) of hearing loss. Surprisingly, a significant decrease in temporal lobe size is associated with midlife hearing loss (32). Cognitive performance over time was better in individuals with hearing loss who wore hearing aids compared to those who did not. Many studies show that using hearing aids can prevent cognitive decline (33). This suggests that cognitive decline is more likely caused by a lack of social interaction than by hearing loss. Raising awareness about

hearing loss in older adults among the population and physicians is essential. Older individuals should report any hearing loss or changes to their physicians. Conversely, physicians should screen older individuals for hearing loss.

11. Head injury:

The risk of dementia escalates with the severity and frequency of head injuries (34,35). In Saudi Arabia, road traffic accidents are the leading cause of head injuries, followed by pedestrian injuries (36). In 2018, the Saudi Arabian government established the National Road Safety Center and introduced new regulations to reduce road traffic fatalities to 10 per 100,000 by 2030. According to the WHO, the number of accidents decreased by 25% between 2016 and 2018. The Saudi Gazette also reported a decrease in major accidents in Saudi Arabia to 6.8% in 2022.

Educating the public about the long-term cognitive effects of head injuries is crucial. It is also important to promote adherence to traffic rules and safety measures, including, but not limited to, obeying speed limits, wearing seatbelts, using helmets during high-risk activities such as motorbike riding, and following pedestrian safety rules when crossing roads. The exploration of Traumatic Brain Injury's (TBI) contribution to dementia and cognition is a relatively new field for researchers and physicians, with no established guidelines to date.

12. Alcohol:

Alcohol consumption is associated with cognitive alterations and dementia (37). Moderate alcohol consumption is defined as 2 drinks or less in a day for men and 1 drink or less in a day for women. Heavy alcohol consumption is defined differently by various organizations, but it generally refers to more than seven drinks per week for adults aged 65 and above. Harmful drinking is characterized as consumption that leads to adverse physical or psychological events, where alcohol is clearly the cause of the harm. While moderate to light alcohol consumption is believed to be protective, many studies supporting this conclusion have limitations. Therefore, it is not advisable to promote drinking as a protective factor, especially given that consuming as little as one to two drinks per day can affect the brain's macro and microstructure (38).

13. Poor sleep:

The relationship between sleep and dementia risk is not fully understood, but sleep disturbances are associated with amyloid-beta (Aβ) deposition, decreased activation of glymphatic clearance pathways, low-grade inflammation, increased Tau, hypoxia, and cardiovascular disease. Sleep disturbances are believed to escalate inflammation, subsequently increasing Aβ burden, which leads to Alzheimer's disease and further sleep disturbances. Sleep disturbances may include short or long sleep duration, poor sleep quality, circadian rhythm abnormalities, insomnia, and obstructive sleep apnea. A U-shaped correlation was observed between sleep duration and the risk of mild cognitive impairment or dementia. Higher risks of dementia were noted with less than 5 hours of sleep compared to more than 5 but less than 7, and more than 10 hours of sleep. Conversely, new onset late-life sleep disturbance could be a part of dementia syndrome.

Recommendations to Mitigate Risk Factors for Dementia

Risk Factors	Recommendations

Physical inactivity	• Promote physical activity to combat dementia.
	    o Recommend exercise dose of at least 150 minutes (moderate) or 75 minutes (vigorous) aerobic exercise weekly, with each session lasting a minimum of 10 minutes. This should be combined with two weekly sessions of weightlifting and resistance exercises.
	    o Encourage older adults who are unable to meet the minimum exercise dose due to health conditions to remain as active as their conditions allow (39–45).

Poor dietary lifestyle	• Promote a healthy and balanced diet is recommended for all groups. • Encourage adherence to a Mediterranean diet for those at risk of dementia. Please refer to Appendix 1 for details on the Mediterranean diet and the World Health Organization's (WHO) healthy diet recommendations, as outlined in their 2017 Dementia Risk Reduction Guidelines. • It is not advised to prescribe vitamin B or E, multivitamins, or polyunsaturated fatty acids as a protection against dementia.
Smoking	• Provide smoking cessation interventions for all types of tobacco products should be a standard care practice for everyone, including those at risk of dementia and cognitive decline.
Reduced years of education and limited social interaction	• Advise older adults with normal cognition or cognitive impairment to continue to participate in cognitive-stimulating activities. • Promote social interaction and maintaining activities among older adults as a protective factor.
Obesity	• Recommend the use of midlife weight loss interventions to lower the risk of dementia. o Use behavioral changes, including dietary adjustments and physical activity programs to manage weight.
Diabetes	• Set the goal of Glycemic for older adults with multiple chronic illnesses, cognitive impairment, or functional dependence to be less strict (A1C < 8.0%). • Lower the Glycemic goals (A1C < 7.0%–7.5%) for healthy older adults with few chronic illnesses, intact cognitive function, and functional status.
Dyslipidemia	• Encourage lifestyle modification to manage cholesterol levels.

	• Treat patients with vascular risk factors who qualify for lipid-lowering therapy.
Hypertension	• Enhance lifestyle modifications such as healthy diet, physical activity, and hypertension management for all adults with high blood pressure.

Depression	• Screen and treat depression among older adults, with either normal cognition or mild cognitive impairment to reduce the risk of cognitive decline or dementia.
	
	   o Several useful tools are available for nonmental health practitioners to screen for depression:
	
	     ▪ The Patient Health Questionnaire-9 (PHQ-9). Please refer to Appendix 2 for the test, which is available in Arabic, easy to self-administer, concise, and includes scoring.
	
	     ▪ The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition Text Revision (DSM-5-TR) for diagnostic criteria for major depressive episodes.
	
	     ▪ The Cornell Scale for Depression in Dementia (CSDD) is the gold standard for assessing depression in dementia patients, but it takes nearly 20 minutes to administer.
	
	     ▪ The Geriatric Depression Scale is another useful method. Please refer to Appendix 3 for the Geriatric Depression Scale.
	
	• Manage adults with depression according to the existing WHO mhGAP guidelines, available in Arabic on the WHO website.
	
	• Use nonpharmacological and psychological treatments for older adults with moderate to severe depressive symptoms.
	
	   o For optimal initial treatment options, use psychoeducation, psychotherapy (if available), and address current stressors.
	
	• Use available pharmacological treatment options.
	
	   o For the first-line options, use Selective Serotonin Reuptake Inhibitors (SSRIs) such as Citalopram, Escitalopram, Fluoxetine, Sertraline, Paroxetine, Dapoxetine, Fluvoxamine, and Vortioxetine, along with Serotonin–Norepinephrine Reuptake Inhibitors (SNRIs) like Venlafaxine, Desvenlafaxine, Duloxetine, Milnacipran, and Levomilnacipran.
	
	   o For second-line options, use Tricyclic antidepressants like amitriptyline and Monoamine oxidase inhibitors A and B.
	
	• Consult the MOH formulary to choose the most suitable medication for patients.
	
	Note: Medications above must be prescribed under a specialist's supervision.

Hearing loss	• Screen older people for hearing changes and refer them for assessments if any changes are reported.

	- Review the medications of older people to ensure they are not taking any potentially ototoxic drugs. - Provide hearing aids to anyone with confirmed hearing impairment.

Head injury	- Reduce the risk of developing dementia after a head injury by applying certain measures such as:
	    o Use extensive cognitive rehabilitation, particularly in the first year after a TBI (despite the lack of strong evidence).
	    o Treat comorbidities, especially mood and anxiety disorders, personality changes related to TBI, and other conditions that increase a patient's vulnerability to dementia, such as hypertension, diabetes, and dyslipidemia.
	    o Encourage weight management; an active and healthy lifestyle; exercise; ongoing cognitive rehabilitation; stimulation; and a combination of cognition-oriented treatments.

Alcohol	- Screen for alcohol consumption and use interventions for those in need. o For screening, refer to Appendix 4 for the Alcohol Use Disorders Identification Test (AUDIT) questionnaire and Appendix 5 for the CAGE Substance Abuse Screening Questionnaire. - For intervention, refer to Appendix 6 for the WHO mhGAP Intervention Guide-Version 2 for mental, neurological, and substance use disorders in nonspecialized health settings.

Poor sleep	- Screen patients for the following:
	    o Difficulty in falling asleep at night.
	    o Constantly waking up during the night.
	    o Experiencing daytime fatigue.
	    o Struggling to focus during the day.
	    o Low energy.
	- Review patient's medications.
	- Provide interventions:
	    o Consider nonpharmacological and behavioral interventions before prescribing medications. Approaches that can be used include avoiding heavy meals and fluids before bedtime, minimizing daytime napping, maintaining a consistent wake-up time, using soothing or white noise, avoiding caffeinated beverages, and using herbal tea or melatonin.
	    o If the previously mentioned approaches were unsuccessful and the patient continues to struggle with sleep, prescribe sleep aids or refer patients to a specialist.
	        ▪ Remember that benzodiazepines are not recommended and should be avoided.

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44.   Paterson DH, Jones GR, Rice CL. Ageing and physical activity: evidence to develop exercise recommendations for older adults. Appl Physiol Nutr Metab. 2007;32(S2E):S69–108.

45.   Paterson DH, Warburton DE. Physical activity and functional limitations in older adults: a systematic review related to Canada's Physical Activity Guidelines. Int J Behav Nutr Phys Act. 2010;7(1):1–22.

Appendix 1:

Mediterranean Diet consists of a high intake of extra virgin olive oil, vegetables, fruits, cereals, nuts, and pulses/legumes, moderate intake of fish, meat, and dairy products, and low intake of eggs and sweets. There are several guidelines on the proportions of each food item this diet should include. In 2011, the Mediterranean Diet Foundation made the latest recommendations: Include olive oil in every meal, at least two servings of vegetables, one to two servings of fruits, breads, and cereals. Consume two or more servings of legumes weekly, one to two servings of nuts daily, two or more servings of fish and seafood weekly, two to four servings of eggs weekly, and two servings of poultry weekly. Have two servings of dairy products daily, limit red meat to less than two servings per week, and sweets to less than two servings per week.

Reference:
Davis C, Bryan J, Hodgson J, Murphy K. Definition of the Mediterranean Diet; a Literature Review. Nutrients. 2015 Nov 5;7(11):9139-53. doi: 10.3390/nu7115459. PMID: 26556369; PMCID: PMC4663587.

WHO's 2017 dementia risk reduction guidelines recommend the following for a healthy diet:
- Fruits, vegetables, legumes (such as lentils and beans), nuts, and whole grains (such as unprocessed maize, millet, oats, wheat, brown rice).
- A minimum of 400g (five servings) of fruits and vegetables daily. Potatoes, sweet potatoes, cassava, and other starchy roots are not categorized as fruits or vegetables.
- Less than 10% of total energy intake from free sugars, equivalent to 50g (or about 12 level teaspoons) for a person of healthy weight consuming around 2000 calories per day. For additional health benefits, ideally, limit to less than 5% of total energy intake. Most free sugars are added to foods or drinks by manufacturers, cooks, or consumers. They can also be found naturally in honey, syrups, fruit juices, and fruit juice concentrates.
- Less than 30% of total energy intake is from fats. Unsaturated fats (found in fish, avocado, nuts, sunflower, canola, and olive oils) are preferable to saturated fats (found in fatty meat, butter, palm and coconut oil, cream, cheese, ghee, and lard) and trans-fats of all kinds, including industrially produced trans-fats (found in processed food, fast food, snack food, fried food, frozen pizza, pies, cookies, biscuits, wafers, margarines, and spreads), as well as ruminant trans-fats (found in meat and dairy foods from ruminant animals such as cows, sheep, goats, camels, and others). The recommendation is to limit saturated fat intake to under 10% of total energy consumption and trans-fat to under 1% of total energy consumption. Specifically, industrially produced trans-fats are unhealthy and should be avoided.
- Less than 5g of salt (roughly 1 teaspoon) daily and use iodized salt.

Reference:
Risk reduction of cognitive decline and dementia: WHO guidelines. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO.

Appendix 2:

				استبيان عن صحة المرضى - 9
				(PHQ-9)

أكثر من تقريبا كل يوم	نصف الأيام	عدة أيام	ولا مرة	خلال **الأسبوعين الماضيين**، كم مرة عانيت من أي من المشاكل التالية؟ (ضع علامة ✓ للإشارة لجوابك)
3	2	1	0	1. قلة الاهتمام أو قلة الاستمتاع بممارسة القيام بأي عمل
3	2	1	0	2. الشعور بالحزن أو ضيق الصدر أو اليأس
3	2	1	0	3. صعوبة في النوم أو نوم متقطع أو النوم أكثر من المعتاد
3	2	1	0	4. الشعور بالتعب أو بامتلاك القليل جدا من الطاقة
3	2	1	0	5. قلة الشهية أو الزيادة في تناول الطعام عن المعتاد
3	2	1	0	6. الشعور بعدم الرضا عن النفس أو الشعور بأنك قد أخذلت نفسك أو عائلتك
3	2	1	0	7. صعوبة في التركيز مثلا أثناء قراءة الصحيفة أو مشاهدة التلفزيون
3	2	1	0	8. بطء في الحركة أو بطء في التحدث عما هو معتاد لدرجة ملحوظة من الآخرين / أو على العكس من ذلك التحدث بسرعة وكثرة الحركة أكثر من المعتاد
3	2	1	0	9. راودتك أفكار بأنه من الأفضل لو كنت ميتا أو أفكار بأن تقوم بإيذاء النفس

_____ + _____ + _____ + _____ = Total Score: _____ (FOR OFFICE CODING)

إذا أشرت إلى **أية** من المشاكل أعلاه، فإلى أية درجة **صعبت** عليك هذه المشاكل القيام بعملك، الاعتناء بالأمور المنزلية، أو الانسجام مع أشخاص آخرين؟

هناك صعوبات بالغة التعقيد	هناك صعوبات شديدة	هناك بعض الصعوبات	ليست هناك أي صعوبة
☐	☐	☐	☐

لقد طور هذا الاستبيان كل من الدكتور روبرت سبيتسر، الدكتورة جانيت ويليامز، الدكتور كيرت كورنيك وزملائهم، وتم ذلك بفضل منحة من مؤسسة Pfizer Inc. ليست هناك أية حاجة للحصول على تصريح من أجل الاستنساخ أو الترجمة أو العرض أو التوزيع.

Reference:

AlHadi AN, AlAteeq DA, Al-Sharif E, Bawazeer HM, Alanazi H, AlShomrani AT, Shuqdar RM, AlOwaybil R. An arabic translation, reliability, and validation of Patient Health Questionnaire in a Saudi sample. Annals of general psychiatry. 2017 Dec;16(1):1-9.

Appendix 3:

Geriatric Depression Scale

مقياس الاكتئاب لدى المسنين (Geriatric Depression Scale-short version)

ضع دائرة حول درجة الجواب المناسب

لا	نعم	إختر الجواب الأنسب لحالتك النفسية خلال الأسبوع الماضي :
1	0	1- هل أنت راضٍ عن حياتك بشكلٍ عام ؟
0	1	2- هل تركت عددا من نشاطاتك و إهتماماتك ؟
0	1	3- هل تشعرُ أنّ حياتك فارغة ؟
0	1	4- هل تصاب بالملل كثيرا ؟
1	0	5- هل أنت في مزاجٍ جيد في معظم الاوقات ؟
0	1	6- هل انت خائف انه سيحصل لك أي مكروه ؟
1	0	7- هل تشعرُ بالسرور معظم الاوقات ؟
0	1	8- هل تشعرُ غالبا انك عاجز ؟
0	1	9- هل تفضّل البقاء في البيت على الخروج ؟
0	1	10- هل تشعرُ أنك تعاني من مشكلة النسيان أكثر من غيرك ؟
1	0	11- هل تعتقّد أنّه شيئ رائع انك على قيد الحياة الآن ؟
0	1	12- هل تشعرُ أنّك عديم الفائدة في الوقت الحالي ؟
1	0	13- هل تشعرُ أنّك في كامل النشاط؟
0	1	14- هل تعتقّد أنّ وضعك ميؤوس منه ؟
0	1	15- هل تعتقّد أنّ أغلبية النّاس أفضل منك حالا ؟
		المجموع

0-4	Not depressed
5-10	Suggestive of a mild depression
11+	Suggestive of severe depression

Reference

Chaaya M, Sibai AM, El Roueiheb Z, Chemaitelly H, Chahine LM, Al-Amin H, Mahfoud Z. Validation of the Arabic version of the short Geriatric Depression Scale (GDS-15). International psychogeriatrics. 2008 Jun;20(3):571-81.

Appendix 4:

استبيان (Questionnaire)

فحص تحديد المشاكل الناتجة عن تناول الكحول: بطريقة الإجابة الشخصية

(The Alcohol Use Disorders Identification Test: Self-Report Version)

المريض: بما أن شرب الكحول قد يؤثر على صحتك ويتفاعل مع بعض الأدوية والعلاجات التي تتبعها فمن الضروري أن نسأل بعض الأسئلة عن تناولك للكحول. ستبقى أجوبتك سرية لذا يرجى الإجابة بصدق.

ضع أشارة X في واحد من المربعات التي تتلاءم على أفضل وجه مع إجابتك عن كل سؤال.

1.5 standard drinks =

OR   OR

1 schooner (425 mls)   1 can (375 mls)   1 stubby (375 mls)

1 standard drink =

OR   OR

middy of beer (285mls)   small glass of wine (100 mls)   nip of spirits (30 mls)

مقياس كوب ونصف من المشروب =

كأس كبير من البيرة (Schooner) (سعة ٤٢٥ مل)

أو
علبة تنك واحدة (سعة ٣٧٥ مل)

أو
زجاجة واحدة (Stubby) (سعة ٣٧٥ مل)

مقياس كوب واحد من المشروب =

كأس متوسط من البيرة (Middy) (سعة ٢٨٥ مل)

أو
علبة تنك واحدة (سعة ٣٧٥ مل)

كوب صغير من النبيذ (سعة ١٠٠ مل)

أو
رشفة من المشروبات الروحية (٣٠ مل)

الجنس: ذكر =   أنثى =   السن: _____

١. ما هو معدل تناولك للمشروبات التي تحتوي على الكحول؟
- لا أشرب أبدا (اذهب إلى السؤالين ٩ و ١٠)
- شهريا أو أقل
- ٢ إلى ٤ مرات في الشهر
- مرتين إلى ثلاث مرات في الأسبوع
- ٤ مرات أو أكثر في الأسبوع

٢. كم كوب من المشروبات الكحولية تتناول عادة في اليوم الذي تشرب فيه؟
- ١ أو ٢
- ٣ أو ٤
- ٥ أو ٦
- ٧، ٨ أو ٩
- ١٠ أو أكثر

٣. ما هو معدل تناولك لستة أكواب أو أكثر في مناسبة واحدة؟
- لا أفعل ذلك أبدا
- أقل من مرة في الشهر
- شهريا
- أسبوعيا
- يوميا أو تقريبا يوميا

٤. خلال العام الماضي كم وجدت أنك متى تبدأ بالشرب فإنك لا تستطيع التوقف؟
- لم يحصل ذلك لي أبدا
- أقل من مرة في الشهر
- شهريا
- أسبوعيا
- يوميا أو تقريبا يوميا

٥. خلال العام الماضي كم وجدت أنك وبسبب الشرب لم تتمكن من القيام بما هو متوقع منك ؟
- لم يحصل ذلك لي أبدا
- أقل من مرة في الشهر
- شهريا
- أسبوعيا

٦. خلال العام الماضي كم كنت تحتاج إلى مشروب في الصباح لكي تتمكن من الشراع بنهارك بعد جلسة أكثرت فيها من الشرب ؟
- لم يحصل ذلك لي أبدا
- أقل من مرة في الشهر
- شهريا
- أسبوعيا
- يوميا أو تقريبا يوميا

٧. خلال العام الماضي كم حصل أنك شعرت بالذنب أو الندم بعد الشرب؟
- لم يحصل ذلك لي أبدا
- أقل من مرة في الشهر
- شهريا
- أسبوعيا
- يوميا أو تقريبا يوميا

٨. خلال العام الماضي كم حصل أنك لم تتمكن من تذكر ما حصل في الليلة السابقة لأنك كنت تشرب؟
- لم يحصل ذلك لي أبدا
- أقل من مرة في الشهر
- شهريا
- أسبوعيا
- يوميا أو تقريبا يوميا

٩. هل حصل أن تعرضت أنت أو شخص آخر لإصابة بسبب تناولك للمشروب؟
- كلا
- نعم ولكن ليس في السنة الماضية
- نعم، خلال السنة الماضية

١٠. هل سبق أن أبدى أحد الأقرباء أو الأصدقاء أو أي طبيب أو موظف صحي قلقا تجاه عادة الشرب لديك و هل اقترح عليك أحدهم التقليل من الشرب؟
- كلا
- نعم ولكن ليس في السنة الماضية
- نعم، خلال السنة الماضية

Reference:

Hallit J, Salameh P, Haddad C, Sacre H, Soufia M, Akel M, Obeid S, Hallit R, Hallit S. Validation of the AUDIT scale and factors associated with alcohol use disorder in adolescents: results of a National Lebanese Study. BMC pediatrics. 2020 Dec;20:1-0.

Appendix 5:

CAGE Substance Abuse Screening Tool

Directions: Ask your patients these four questions and use the scoring method described below to determine if substance abuse exists and needs to be addressed.

CAGE Questions

1. Have you ever felt you should cut down on your drinking?
2. Have people annoyed you by criticizing your drinking?
3. Have you ever felt bad or guilty about your drinking?
4. Have you ever had a drink first thing in the morning to steady your nerves or to get rid of a hangover (eye-opener)?

CAGE Questions Adapted to Include Drug Use (CAGE-AID)

1. Have you ever felt you ought to cut down on your drinking or drug use?
2. Have people annoyed you by criticizing your drinking or drug use?
3. Have you felt bad or guilty about your drinking or drug use?
4. Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to get rid of a hangover (eye-opener)?

Scoring: Item responses on the CAGE questions are scored 0 for "no" and 1 for "yes" answers, with a higher score being an indication of alcohol problems. A total score of two or greater is considered clinically significant.

The normal cutoff for the CAGE is two positive answers, however, the Consensus Panel recommends that the primary care clinicians lower the threshold to one positive answer to cast a wider net and identify more patients who may have substance abuse disorders. A number of other screening tools are available.

CAGE is derived from the four questions of the tool: Cut down, Annoyed, Guilty, and Eye-opener

CAGE Source: Ewing 1984

Reference:
Ewing JA. Detecting alcoholism: the CAGE questionnaire. JAMA. 1984 Oct 12;252(14):1905-7.

Appendix 6:

WHO mhGAP Intervention Guide-Version 2 for Mental, Neurological, and Substance Use Disorders in Non-specialized Health Settings.

The WHO mhGAP Intervention Guide recommends the following:

- Detrimental alcohol consumption.
- Provide psychoeducation and stress that the level or pattern of alcohol consumption is causing health damage.
- Investigate the individual's reasons for using alcohol.
- Conduct motivational interviewing.
- Recommend complete cessation of alcohol or consumption at a nonharmful level (if a nonharmful level exists) and indicate your intention to support the person in doing so.
- Inquire the individual if they are prepared to make this change.
- Investigate strategies for decreasing or ceasing use and methods for reducing harm.
- Address needs related to food, housing, and employment.
- Provide regular follow-ups.

Alcohol Dependence

- Use of Thiamine during Alcohol Consumption.
- Use of Diazepam in alcohol detoxification for treating withdrawal symptoms.
- Use of Naltrexone, Acamprosate, or Disulfiram to prevent relapse after detoxification.
- Use Psychosocial Interventions, if available, such as Cognitive Behavior Therapy, Motivational Enhancement Therapy, Contingency Management Therapy, Family Counseling or Therapy, Problem-Solving Counseling or Therapy, or Self-Help Groups.

Reference:
mhGAP Intervention Guide - Version 2.0 for mental, neurological and substance use disorders in non-specialized health settings. World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO.

Abbreviation:

ACCORD	Action to Control Cardiovascular Risk in Diabetes
AUDIT	Alcohol Use Disorders Identification Test
Aβ	Amyloid-beta
Arabic BADL	Arabic Bristol Activity of Daily Living Scale
CERAD	Consortium to Establish a Registry for Alzheimer's Disease
dB	decibel
DSM-5-TR	Diagnostic and Statistical Manual of Mental Disorders Fifth Edition Text Revision
DBP	Diastolic Blood Pressure
FHS	Framingham Heart Study
MIND	Memory in Diabetes
MMSE	Mini-Mental State Exam
MoCA	Montreal Cognitive Assessment
OS	Offspring
PHQ-9	Patient Health Questionnaire-9
SNPI	Saudi version of the Neuropsychiatric Inventory
SSRIs	Selective serotonin reuptake inhibitors
SNRIs	Serotonin–Norepinephrine Reuptake Inhibitors
SBP	Systolic Blood Pressure
SPRINT MIND	Systolic Blood Pressure Intervention Trial - Memory and Cognition in Decreased Hypertension
TBI	Traumatic Brain Injury
WHO	World Health Organization