



ORIGINAL ARTICLE

Knowledge Level of Alzheimer's Disease among Adults Attending Primary Healthcare Centers in the Kingdom of Bahrain

Fajer Alammadi^{1*}, Zahra Almosawi¹, Nusaiba Alabbasi¹, Maryam Janahi¹, Maryam Abdulla¹, Behnaz Tadayyon²

¹Fourth-year Family Medicine Resident, Primary Healthcare Centers, Manama. Kingdom of Bahrain

²Consultant Family Medicine, Primary Healthcare Centers, Manama, Kingdom of Bahrain

*Corresponding author:

Dr. Fajer Alammadi, Fourth-year Family Medicine Resident, Primary Healthcare Centers, Manama. Kingdom of Bahrain; Tel. No.: (+973) 36770001; Email: fajer.ammadi@gmail.com

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Abstract

Background: With the increasing number of older population in Bahrain, multiple neurodegenerative diseases are arising, including Alzheimer's disease (AD). Complications related to AD progression and morbidities have introduced new challenges to the patient and the caregiver.

Objective: The aim of this study was to assess the knowledge of AD among adults.

Methods: A cross-sectional study was conducted in primary care centers using two tools randomly distributed to adults attending the centers. The two tools used were a questionnaire measuring AD awareness and a validated Alzheimer's disease Knowledge Scale (ADKS), which measures knowledge across seven categories.

Results: A total of 620 respondents were included in the study. Most were Bahraini (88.9%) middle-aged adults (25-39 years). Only 13.2 % of the participants had a family history of a relative with AD. Of the 620 participants, 431 scored more than 50%. The mean of the overall knowledge score was 57.6%, with a standard deviation of 11.8. The results showed that females were significantly more knowledgeable about AD, with a p-value of 0.04.

Conclusion: Our study results identified gaps in knowledge about Alzheimer's disease. Advocacy for health promotion is necessary to raise awareness about the disease.

Keywords: Alzheimer's disease; Dementia; Knowledge; Primary Healthcare; Bahrain

Introduction

Alzheimer's disease (AD) is a progressive neurodegenerative disorder that typically affects older adults, with incidence increasing exponentially over the age of 65 years. The cause of the disease is not fully understood yet. AD is considered the most common cause of dementia. It is characterized by

inevitable deterioration affecting multiple cognitive domains like memory and performing day-to-day tasks. There is no definite cure for AD, and it inevitably progresses in all patients.¹

A systematic literature review conducted by El-Metwally et al. examined the epidemiology of dementia in six Arab countries. It showed that

dementia is prevalent in Arab countries, reaching up to 2.3% among people aged 50+ and up to 18.5% among those aged 80+ years.² Globally, dementia is estimated to affect 47 million individuals.³ Similarly, age was the most significant risk factor for AD globally, where risk doubles every 10 years after the age of 60.^{4,5}

With the increasing number of cases worldwide, it is essential to understand and estimate the burden of dementia. The global number of cases of dementia from 1990 to 2016 has become more than two times higher.⁶ It is anticipated that dementia will cause an increasing challenge to the healthcare systems globally.⁶ As of 2020, AD is considered the fifth leading cause of death in those aged above 65 years and is a leading cause of disability and poor health.⁷

In that regard, knowledge of AD in the general population is fundamental. Studies conducted in the Kingdom of Saudi Arabia (KSA) in regions like Mecca and Aseer concluded that knowledge was deficient, particularly regarding symptoms, risk factors, and life impacts.^{8,9} Another study by Jernigan et al. in the United States showed moderate knowledge levels.¹⁰ In addition, a systematic review involving 40 articles concluded that most studies showed a fair to moderate level of knowledge of AD among the public.¹¹ Such gaps in knowledge are troubling, and thus, community-based awareness programs should be encouraged.

As of 2019, data reveals that 2.52% of the Bahraini population is above 65 years of age.¹² Hence, being the first of its kind in Bahrain, this study will explore the essential gaps in disease knowledge concerning AD.

Research Question

What is the knowledge level of AD among adults attending primary healthcare centers in the Kingdom of Bahrain?

Aim

To identify knowledge gaps about AD to improve the care and outcome of patients with the disease.

Objectives

- To determine the knowledge level about AD among adults attending primary care regarding

- risk factors, assessment, diagnosis, symptoms, disease course, and caregiving.

- To test the association between demographic factors and AD knowledge scores.

Methods

This cross-sectional study was performed in primary healthcare centers in the Kingdom of Bahrain. The target population is adults aged 18, both males and females, who understand the Arabic or English language. Illiterate individuals, those who visited the health center due to an emergency, and patients diagnosed with AD are excluded from the study. The sample size was determined using a verified online calculator.¹³

Study Design

Cross-sectional study

Setting

Primary healthcare centers in the Kingdom of Bahrain.

Study Population

Adults aged 18 and above attending primary healthcare centers in the Kingdom of Bahrain.

Sample size

AD prevalence and knowledge in Bahrain are unknown. An online sample size calculator was used, assuming the prevalence was 50%, with a confidence interval of 95% and a significance level of 5%.¹³ The recommended sample size was 383 persons.

Criteria for Inclusion and Exclusion

The inclusion criteria included Arabic or English-speaking adults aged above 18 years of both genders.

The exclusion criteria included patients diagnosed with AD, those who are illiterate, and any patient who came for an emergency case.

Data Collection Instrument and Variables

Our study used two self-administered tools in both Arabic and English languages.^{9,14} Appendices 3 & 4 The first is an adapted questionnaire from Alhazzani et al. to assess the attitude and awareness of AD in the population.⁹ It comprises a set of 10 questions or statements to which the participant will either

“agree” or “disagree”. The second is a validated questionnaire named the Alzheimer’s Disease Knowledge Scale (ADKS) with a Cronbach’s alpha = 0.71.15. Permission was granted from the original author, who developed the scale *via* e-mail.¹⁵

The ADKS measures AD knowledge according to seven main domains:

1. Risk factors (6 items)
2. Life impact (3 items)
3. Assessment and diagnosis (4 items)
4. Course (4 items)
5. Caregiving (5 items)
6. Treatments (4 items)
7. Symptoms (4 items)

The scale comprises 30 true or false items; the score is based on the number of items answered correctly, giving a total score of 0-30. There are no cut points for what would indicate “good” or “adequate” knowledge since that would vary from person to person and group to group. The original validation article compared the means and standard deviations for different groups (e.g., older adults without dementia, dementia caregivers, and dementia professionals).¹⁵ Moreover, because of the true/false format, a score of 15 could be expected to occur by chance alone, so scores should be substantially above 15 to indicate some degree of knowledge. Participants took around 7-20 minutes to complete the questionnaire.

Method of Scoring

We decided to document the ADKS scores as a percentage for easier comparison. A score of 1 was assigned to correct answers, and a score of 0 was assigned to incorrect answers. Then, the mean scores for overall knowledge and subscales were calculated according to the following formula:

$$\text{Mean score} = \frac{\text{Sum of scores}}{\text{Number of items}} \times 100$$

Sampling Technique and Data Collection Procedure

By convenience sampling method, we selected our population from Bahrain’s biggest five governmental health centers that cover the greatest catchment area based on Ministry of Health statistics. We chose one

health center from each health region conveniently. The selected health centers (HC) were Yousif Abdulrahman Engineer HC, Mohammed Jassim Kanoo HC, Hidd BBK HC, Shaikh Jaber HC, and Hamad Kanoo HC. As the questionnaires were already used with satisfactory results by Alhazzani et al. in a similar population in KSA, a pilot study was not conducted.⁹

Our sample was recruited from the reception area by convenience sampling. Once participants agreed to participate and their consent was obtained, the questionnaire was given to them to complete online by scanning a QR code.

Data Management and Analysis Plan

- The questionnaire was given online, and the respondents were unable to complete the survey without filling in all the required fields. Hence, there were no missing values in the analysis.
- A database was created in the statistical software “SPSS” with all the variables in the study labeled.
- Data were entered in the statistical program “SPSS”.
- Frequency checks were done to overview the data and ensure no data was missing or entered wrongly.
- Descriptive analysis was carried out to report frequencies and percentages of the variables in the study.
- T-test analysis was conducted to compare knowledge scores among males and females.
- Correlation was used to compare knowledge scores among age as a continuous variable.

Ethical Considerations

- The tool used in the study, “Alzheimer’s Disease Knowledge Scale,” was a validated tool published online with permission to be used by any researcher.¹⁵
- Informed and written consent were taken from participants before distributing the questionnaire (Appendices 1 & 2).
- No intrusive questions were asked, and all information shared by the participants was kept confidential.

- Ethical approval was obtained from the research committee in the Ministry of Health in the Kingdom of Bahrain to conduct the study in the primary healthcare setting.

Results

Sample and Demographic Characteristics of Participants

A total of 620 completed the interview. Table 1 shows the respondents' characteristics. Most of the participants were females (55.6%). Middle-aged adults (25-39 years) were the prevalent responders (52.9%). The vast majority were Bahrainis (88.9%). More than half (55.2%) had at least a bachelor's degree. The majority of the participants (86.8%) had no family history of a relative with AD.

Table 1: Demographic Characteristics of Participants

Sex	n (%)
Male	275 (44.4)
Female	345 (55.6)
Age in years	
18 – 24	107 (17.3)
25 – 39	328 (52.9)
40 - 54	126 (20.3)
≥55	59 (9.5)
Mean (SD)	35.3 (12.3)
Nationality	
Bahraini	551 (88.9)
Non-Bahraini	69 (11.1)
Level of Education	
Below High school	30 (4.8)
High school	248 (40)
Bachelor or higher	342 (55.2)
Family with Alzheimer's	
Yes	82 (13.2)
No	538 (86.8)

Respondents' Attitude and Awareness of AD

Almost seventy percent (71.5%) of the respondents believe that it is necessary to resort to the court to save patients' rights. Most respondents (63.4%) also believe that change in planning matters of everyday life and inability to balance finances is expected in the elderly and not related to a disease. Over half of the respondents (55.2%) said that forgetfulness and repeating stories are expected in the elderly and do not require medical attention. Only a minority of

respondents (26.8%) believed that AD is a result of witchcraft or psychological stressors. Additionally, a small percentage of respondents would feel ashamed if they had a family member diagnosed with AD (11.1%) and would deny the diagnosis (11.6%) (Table 2).

Table 2: Respondents' Attitude and Awareness of Alzheimer's Disease

	Agree n (%)	95% CI for %
In a patient with Alzheimer's disease who is experiencing difficulties with carrying out daily activities, do you think it would be necessary to refer to the court to preserve his or her rights?	443 (71.5)	(67.8 to 74.9)
Do you think that changing daily plans and inability to balance finances is something expected in elderly people?	393 (63.4)	(59.5 to 67.1)
Do you believe that forgetting names, important dates and repeating stories and questions are things, which are normally expected in elderly people, and does not require a medical consultation?	342 (55.2)	(51.2 to 59.0)
If you have a relative diagnosed with Alzheimer's disease, would you prefer not to tell them of their diagnosis?	315 (50.8)	(46.9 to 54.7)
Do you think that patients diagnosed with Alzheimer's disease should receive care in nursing homes as per regulations set by the law rather than receiving care in their own homes?	185 (29.8)	(26.3 to 33.5)
In case a relative displays symptoms of memory disturbance, would you resort to alternative medicine?	178 (28.7)	(25.3 to 32.4)

In case a diagnosis of Alzheimer's disease in an individual, do you believe that, it is best that he or she should avoid attending social functions and daily activities to avoid any sort of embarrassment?	169 (27.3)	(23.9 to 30.9)
Alzheimer's disease is the result of witchcraft or psychological stressor.	166 (26.8)	(23.4 to 30.4)
Would you tend to deny the diagnosis of Alzheimer's disease if a family member or a relative was given that diagnosis?	72 (11.6)	(9.3 to 14.3)
Would you feel ashamed if you had a family member or a relative who was diagnosed with Alzheimer's disease?	69 (11.1)	(8.8 to 13.8)

Respondents' Knowledge of AD

Among the 620 participants, 431 scored greater than 15 out of 30 (69.5%) (Table 3).

Table 3: Number of Participants per Score

Score (out of 30)	n (%)
16	68 (11.0%)
17	76 (2.7%)
18	74 (11.9%)
19	61 (9.8%)
20	55 (8.9%)
21	34 (5.5%)
22	18 (2.9%)
23	11 (1.8%)
24	14 (2.3%)
25	10 (1.6%)
26	4 (0.6%)
27	4 (0.6%)
28	0 (0.0%)
29	2 (0.3%)
30	0 (0.0%)
Total who scored > 15	431 (69.5%)

The mean respondents' overall knowledge score about Alzheimer's disease was 57.6 (equivalent to 17.28 out of 30), with a standard deviation of 11.8. The highest scores were in the "Assessment and diagnosis" and "Life impact" domains, with a mean of 72.9 (SD 24.5) and 67.2 (SD 28.3) respectively. The lowest scores were observed in the "Caregiving" and "Risk factors" domains, with a mean of 52.0 (SD 21) and 47.2 (SD 21) respectively (Table 4). Appendix 5 provides a more thorough breakdown of respondents' scores for each domain.

Table 4: Respondents' Knowledge Score about Alzheimer's Disease

	Mean (SD)*
Overall Knowledge Score	57.6 (11.8)
Assessment and Diagnosis	72.9 (24.5)
Life Impact	67.2 (28.3)
Treatment	61.6 (23.7)
Course	57.5 (24.2)
Symptoms	57.4 (22.6)
Caregiving	52.0 (21)
Risk Factors	47.2 (21)

* The mean (SD) score was calculated out of 100.

Difference in Respondents' Mean Score Knowledge According to Sociodemographic Characteristics

The overall knowledge mean score revealed that females (58.4) did significantly better than males (56.4) (*t-tests*, and *p-value* 0.037). Females also scored higher in life impact and treatment domains (*t-tests*, *p-value* <0.01 for both). In most domains, there was a significant difference in AD knowledge between different age groups, with the age group 25-39 years being knowledgeable in the overall score (ANOVA test, *p-value* < 0.01). There was no significant difference in knowledge scores based on their nationality (*t-tests*, *p-value* > 0.05). Education levels did show a significant difference in AD knowledge in almost all domains, with higher overall knowledge elicited in individuals with a bachelor's degree or higher (ANOVA test, *p-value* < 0.01). People who have a family member with Alzheimer's disease were found to be more knowledgeable in comparison to those who did not have a family member with the disease (*t-tests*, *p-value* < 0.01) (Table 5).

Table 5: Difference in Respondents' Mean Score Knowledge according to Sociodemographic Characteristics

	Overall Knowledge Score	Risk Factors	Life Impact	Assessment and Diagnosis	Course	Caregiving	Treatment	Symptoms
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Sex								
Male	56.4 (11.9)	48.5 (20.9)	63.4 (29.2)	72 (25)	55.5 (23.2)	51.9 (20.4)	58 (24.3)	56.7 (22.9)
Female	58.4 (11.6)	46.1 (21)	70.1 (27.2)	73.7 (24.2)	59.1 (24.8)	52.1 (21.5)	64.5 (22.7)	58 (22.4)
P-value	0.037	0.156	0.003	0.393	0.072	0.905	0.001	0.497
Age in years								
18 – 24	54.5 (11.7)	50.6 (19.7)	60.4 (29.7)	72.7 (24.9)	55.6 (23.4)	47.1 (21.8)	57.2 (23.5)	48.8 (22.1)
25 – 39	59 (12.1)	48 (21.2)	70.7 (27.3)	73.2 (23.6)	58.8 (25)	54.1 (21.5)	63.1 (24.5)	58.2 (22)
40 – 54	55.9 (10.4)	44.2 (21.6)	63.2 (28.2)	72 (25.6)	56 (24)	50.3 (17.5)	59.5 (21.9)	60.1 (24.1)
≥55	58.5 (11.5)	43.2 (19.8)	67.8 (28.3)	74.2 (27.1)	56.8 (21.2)	52.2 (22.3)	65.7 (21.7)	63.1 (19.9)
P-value	0.002	0.045	0.003	0.948	0.526	0.018	0.052	<0.001
Nationality								
Bahraini	57.9 (11.8)	47.2 (20.7)	67.9 (27.7)	73.7 (23.9)	57.7 (24.2)	52.3 (21)	62.2 (23.5)	57.3 (23)
Non-Bahraini	55.1 (12)	47.6 (23.1)	60.9 (31.8)	66.7 (28.7)	55.8 (24.3)	49.6 (20.8)	56.9 (24.2)	58.3 (19.5)
P-value	0.064	0.873	0.082	0.053	0.535	0.314	0.078	0.722
Level of Education								
Below High school	51.7 (8.4)	46.7 (19.3)	61.1 (31.7)	63.3 (31.3)	45.8 (19.8)	45.3 (18.1)	53.3 (23.4)	56.7 (16)
High school	54.4 (10.9)	44.9 (21.4)	61.2 (28.5)	71.5 (25.3)	54.5 (22.9)	48.5 (19.3)	58.3 (21.9)	53.6 (22.7)
Bachelor or higher	60.4 (11.9)	48.9 (20.7)	72 (26.9)	74.9 (23.1)	60.7 (24.9)	55 (21.9)	64.8 (24.5)	60.2 (22.8)
P-value	<0.001	0.069	<0.001	0.023	<0.001	<0.001	0.001	0.002
Family with Alzheimer's								
Yes	61.5 (11.9)	47.6 (21.8)	74.8 (25.4)	76.8 (22.1)	62.2 (21.2)	54.6 (20.6)	68 (20.9)	61.9 (22.3)
No	57 (11.7)	47.1 (20.9)	66 (28.5)	72.4 (24.9)	56.8 (24.5)	51.6 (21.1)	60.6 (23.9)	56.7 (22.6)
P-value	0.001	0.869	0.008	0.124	0.059	0.218	0.004	0.055

Discussion

The majority of the respondents (69.5%) scored more than 15 out of 30, which was satisfactory in comparison to other studies conducted in KSA and Alaska (49.9% and 86%, respectively).^{9, 10} This could be due to cultural beliefs and practices where individuals in Bahrain and the Gulf region play a role in caregiving and usually live with their extended family members, hence, allowing more exposure to patients with AD.

This study involved 620 participants and was conducted primarily to explore the knowledge of AD among the public in the Kingdom of Bahrain.

In our study, sex, age, level of education, and having a family member with AD were significantly associated with the knowledge level regarding AD.

In general, females were more knowledgeable about AD in our study. This was similar to previous studies done in the Gulf region and Europe.^{9, 16} When considering the subscale of sex; our results showed that females were specifically more knowledgeable in the domains of life impact and treatment of the disease. Gulf region mores gave females the leading role in family caregiving, possibly justifying the significance.

The present study revealed that participants with an AD family member had significantly better overall knowledge of the disease, which is also supported by Garcia-Ribas et al.¹⁶ Exposure to any disease through a close relative is a motivation itself to explore different aspects of the disease, which would rationalize the significance.

Our study elicited that adults aged 25-39 years were more knowledgeable in the overall mean score compared to other age groups. This result was evident in studies done in different parts of the world.^{9, 16, 17} These findings could be due to ease of access to the World Wide Web and increased exposure to healthcare information.

The level of education had a positive correlation with the knowledge scale; participants with higher degrees had greater overall knowledge scores. Our results were also similar to those published by Carpenter et al., the developer of the ADKS. Possibly, this can be explained by the fact that individuals with higher education are more enthusiastic about learning about their daily life experiences.¹⁸

Our population scored higher in the assessment subscale (mean of 72.9 of 100), followed by life impact, treatment, and course of the disease; while the lowest recognized subscales were care giving and risk factors. This finding was similar to a study conducted in KSA where assessment (75%) was also the highest subscale known.⁸ Another study conducted in Aseer, a different region in KSA, also reported assessment as the second-highest identified subscale.⁹ Additionally, both risk factors and caregiving were regarded as the least known subscales. This might be due to the similarities in sociodemographic characteristics of the participants in the Arabian Gulf region.

Limitations

This study was the first of its kind in the Kingdom of Bahrain. However, some significant limitations should be remarked on. The study involved a convenient sampling of participants attending primary care, which imposed a limitation when generalizing the findings. Due to this sampling method, there was also selection bias, as participants

who completed the questionnaire might have been more knowledgeable.

Furthermore, the tool used in the study consisted of True-and-False questions, which gave a 50% probability of answering the question correctly by chance. Also, there was no minimum cut-off score to determine the adequate level of AD knowledge. In addition, the measure of internal consistency was 0.4 using the Cronbach's alpha scale.

Conclusion and Recommendations

In conclusion, the results of our study identified gaps in knowledge about AD. These findings illustrate the need for health education campaigns through local and social media platforms. The health promotion acts should be tailored considering the different age groups and education levels in the Kingdom of Bahrain. Campaigns will raise public awareness about the symptoms and progression of AD. Consequently, relatives will be encouraged to accompany family members with suspected AD to a medical evaluation. This will enable AD patients to be detected and treated earlier. As a result, we will be able to provide better care and outcomes to our patients.

Conflicts of Interests

The authors declared no conflict of interest.

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Appendix 1- Informed Consent (English Version)

Kingdom of Bahrain Ministry of Health

Title of Research: Knowledge level of Alzheimer disease among adults attending primary care in the Kingdom of Bahrain

This study is conducted by: Dr. Zahra Almosawi, Dr. Maryam Janahi, Dr. Fajer Alammadi, Dr. Nusaiba Alabbasi and Dr. Maryam Abdulla

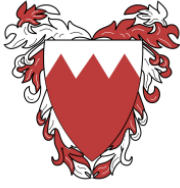
This is a simple questionnaire for a study about Alzheimer disease level of knowledge among adults in Bahrain. We greatly appreciate your participation in it.

Informed Consent:

- **By proceeding with the questionnaire, you agree to participate in this research study and confess the following:**
- I understand the purpose and nature of this study.
- I agree to participate in this research study and I am participating voluntarily.
- I grant permission for the data generated from this questionnaire to be used in the researcher's publications on this topic.
- I am aware that I have to answer all the questions from the questionnaire.

I am aware that the records from this study will be kept as confidential as possible, no individual identities will be used in any reports or publications resulting from the study. No intrusive questions will be asked that will harm you or any of your relatives or acquaintances.

Appendix 2- Informed Consent (Arabic Version)



البحرين

مملكة
وزارة الصحة

عنوان البحث: مستوى المعرفة بمرض الزهايمر للبالغين من زوار المراكز الصحية في مملكة البحرين.
تم إجراء هذه الدراسة بواسطة: د. زهراء الموسوي، د. مريم جناحي، د. فجر العمادي، د. نسيبة العباسي، د. مريم
عبدالرحمن.

هذا عبارة عن استبيان بسيط حول مدى معرفة البالغين في مملكة البحرين بمرض الزهايمر. نحن نقدر اشتراكك في هذا الاستبيان.

موافقة مسبقة

من خلال المواصلة بتعبئة الاستبيان، فإنك توافق على المشاركة في هذه الدراسة البحثية وتقر بالآتي:

- أنا على إطلاع بطبيعة وهدف هذه الدراسة وموافق/ة على المشاركة فيها طوعا.
- أنا أوافق على استخدام كافة المعلومات في هذا الاستبيان لأهداف بحثية في دراسات تتعلق بهذا الموضوع.
- أنا على علم بأنه يتوجب على الإجابة على جميع الأسئلة الواردة في الاستبيان.
- أنا على علم بأن كافة البيانات التي جمعت من البحث سيتم الحفاظ عليها بشكل سري ولن يتم استخدام أي معلومات خاصة بالأفراد في أي من البحوث والدراسات. لم يتم وضع أي سؤال بشكل تطفلي والإجابة على الأسئلة لن ينتج بأي ضرر لك أو لأفراد عائلتك أو معارفك.

Appendix 3- Questionnaire (English Version)

ALZHEIMER'S DISEASE KNOWLEDGE SCALE

Below are some statements about Alzheimer's disease. Please read each statement carefully and circle whether you think the statement is True or False. If you aren't sure of the right answer, make your best guess. It's important to circle an answer for every statement, even if you're not completely sure of the answer.

Gender: Male Female.

Age: _____

Marital status: Single Married Divorced Widow
 Separated

Living status: Alone Simple family (father, mother & children)
 Extended family (grandparents, grandchildren, uncles etc.)

Nationality: Bahraini Non Bahraini

Level of education: Illiterate Primary school Middle school High school
 Bachelor degree Higher studies

Employment status: Employed Unemployed Student

Occupation sector: Education sector (general diploma or postgraduate studies)
 Health sector (practitioner) Governmental sector Private sector
 Business Retired Unemployed

Monthly income: < 300 BD 300-600 BD 600-1000 BD More than 1000 BD

Do you have a family member diagnosed with Alzheimer's disease? Yes No

Living area: _____

Governate: Muharraq Capital Northern Southern

Do you believe that forgetting names, important dates and repeating stories and questions are things which are normally expected in elderly people, and doesn't require a medical consultation?

Agree Disagree

Do you think that changing daily plans and inability to balance finances is something expected in elderly people?

Agree Disagree

If you have a relative (god forbid) diagnosed with Alzheimer's disease, would you prefer not to tell them of their diagnosis?

Agree Disagree

In case a diagnosis of Alzheimer's disease in an individual, do you believe that its best that he or she should avoid attending social functions and daily activities to avoid any sort of embarrassment:

Agree Disagree

Alzheimer's disease is the result of witchcraft or psychological stressor: Agree Disagree

In case a relative (god forbid) displays symptoms of memory disturbance, would you resort to alternative medicine?

Agree Disagree

In a patient with Alzheimer’s disease who is experiencing difficulties with carrying out daily activities, do you think it would be necessary to refer to the court to preserve his or her rights?

- Agree Disagree

Would you feel ashamed if you had a family member or a relative who was diagnosed with Alzheimer’s disease? Agree Disagree

Would you tend to deny the diagnosis of Alzheimer’s disease if a family member or a relative was given that diagnosis? Agree Disagree

Do you think that patients diagnosed with Alzheimer’s disease should receive care in nursing homes as per regulations set by the law rather than receiving care in their own homes?

- Agree Disagree

Question	True	False
People with Alzheimer’s disease are particularly prone to depression.		
It has been scientifically proven that mental exercise can prevent a person from getting Alzheimer’s disease.		
After symptoms of Alzheimer’s disease appear, the average life expectancy is 6 to 12 years.		
When a person with Alzheimer’s disease becomes agitated, a medical examination might reveal other health problems that caused the agitation.		
People with Alzheimer’s disease do best with simple, instructions given one step at a time.		
When people with Alzheimer’s disease begin to have difficulty taking care of themselves, caregivers should take over right away.		
If a person with Alzheimer’s disease becomes alert and agitated at night, a good strategy is to try to make sure that the person gets plenty of physical activity during the day.		
In rare cases, people have recovered from Alzheimer’s disease.		
People whose Alzheimer’s disease is not yet severe can benefit from psychotherapy for depression and anxiety.		
If trouble with memory and confused thinking appears suddenly, it is likely due to Alzheimer’s disease.		
Most people with Alzheimer’s disease live in nursing homes.		
Poor nutrition can make the symptoms of Alzheimer’s disease worse.		
People in their 30s can have Alzheimer’s disease.		
A person with Alzheimer’s disease becomes increasingly likely to fall down as the disease gets worse.		
When people with Alzheimer’s disease repeat the same question or story several times, it is helpful to remind them that they are repeating themselves.		
Once people have Alzheimer’s disease, they are no longer capable of making informed decisions about their own care.		
Eventually, a person with Alzheimer’s disease will need 24-hour supervision.		
Having high cholesterol may increase a person’s risk of developing Alzheimer’s disease.		
Tremor or shaking of the hands or arms is a common symptom in people with Alzheimer’s disease.		
Symptoms of severe depression can be mistaken for symptoms of Alzheimer’s disease.		
Alzheimer’s disease is one type of dementia.		
Trouble handling money or paying bills is a common early symptom of Alzheimer’s disease.		

One symptom that can occur with Alzheimer’s disease is believing that other people are stealing one’s things.		
When a person has Alzheimer’s disease, using reminder notes is a crutch that can contribute to decline.		
Prescription drugs that prevent Alzheimer’s disease are available.		
Having high blood pressure may increase a person’s risk of developing Alzheimer’s disease.		
Genes can only partially account for the development of Alzheimer’s disease.		
It is safe for people with Alzheimer’s disease to drive, as long as they have a companion in the car at all times.		
Alzheimer’s disease cannot be cured.		
Most people with Alzheimer’s disease remember recent events better than things that happened in the past.		

What is your resource about Alzheimer’s disease?

- Family and friends
 Newspapers and magazines
 TV
 Medical websites
 Social media
 Doctors
 Study / work field
 I do not have any source

Others: _____

Are you interested in knowing more about Alzheimer’s disease? Yes No

Appendix 4- Questionnaire (Arabic Version)

استبيان قياس مدى معرفة ووعي المجتمع عن مرض الزهايمر

الجنس : ذكر أنثى

العمر :

الحالة الاجتماعية : أعزب متزوج مطلق أرمل منفصل

المعيشة : بمفردي أسرة صغيرة (الأب والأم والأبناء فقط) أسرة ممتدة (تشمل الأجداد أو الأحفاد والأعمام)

الجنسية : بحريني غير بحريني

المستوى التعليمي : أمي الابتدائي المتوسط الثانوي درجة البكالوريوس دراسات عليا

العمل : أعمل لا أعمل طالب/ة

جهة العمل : التعليم (العام أو العالي) القطاع الصحي (ممارس) موظف حكومي قطاع خاص أعمال حرة متقاعد لا أعمل غير ذلك

الدخل الشهري : أقل من 300 دينار 300 – 600 دينار 600 – 1000 دينار أكثر من 1000 دينار

هل لديك أحد أقاربك مصاب بمرض الزهايمر : نعم لا

منطقة السكن:

المحافظة: المحرق العاصمة الشمالية الجنوبية

- هل تعتقد أن نسيان الأسماء والمواعيد المهمة وتكرار القصص والأسئلة أمر متوقع لدى كبار السن ولا يستدعي إشارة طبية :

أوافق لا أوافق

- هل تعتقد أن التغيير في تخطيط أمور الحياة اليومية وصعوبة موازنة الحسابات المالية أمر متوقع لدى كبار السن :

أوافق لا أوافق

- في حال إصابة أحد أقاربك بالزهايمر (لا سمح الله) , هل تفضل عدم إخبار الشخص المصاب بمرضه :

أوافق لا أوافق

- في حالة تشخيص المصاب بالزهايمر , هل تعتقد أنه من الأفضل تجنب ذهابه للمناسبات الاجتماعية والأنشطة الحياتية تجنباً لإحراج المريض :

أوافق لا أوافق

- مرض الزهايمر قد ينتج عن العين أو السحر أو الضغوطات النفسية :

أوافق لا أوافق

- في حالة ظهور أعراض الخرف واضطراب الذاكرة لأحد أقاربك (لا سمح الله) ، هل ستلجأ لأنواع الطب الشعبي البديل :

أوافق لا أوافق

- في حالة وجود صعوبة في أداء المهام اليومية لدى مريض الزهايمر ، هل ترى أنه من الضروري اللجوء للقضاء لحفظ حقوق المريض :

أوافق لا أوافق

- هل تشعر بالحرج في حال تشخيص أحد أقاربك (لا سمح الله) بمرض الزهايمر :

أوافق لا أوافق

- هل تميل إلى إنكار التشخيص عند إصابة أحد أقاربك (لا سمح الله) بمرض الزهايمر :

أوافق لا أوافق

- هل أنت مع رعاية هؤلاء المرضى في دور رعاية المسنين من قبل الدولة بدلا من إبقائهم في المنزل :

أوافق لا أوافق

خطأ <input type="radio"/>	صحيح <input type="radio"/>	1. الأشخاص المصابين بمرض الزهايمر عرضة بشكل خاص للاكتئاب .
خطأ <input type="radio"/>	صحيح <input type="radio"/>	2. ممارسة التمارين الذهنية يمكن أن تمنع الشخص من الإصابة بمرض الزهايمر.
خطأ <input type="radio"/>	صحيح <input type="radio"/>	3. بعد ظهور أعراض الزهايمر، فإن متوسط العمر المتوقع هو 6 سنوات إلى 12 سنة.
خطأ <input type="radio"/>	صحيح <input type="radio"/>	4. عندما يكون الشخص المصاب بمرض الزهايمر متهيج ، الفحص الطبي قد يكشف عن مشاكل صحية أخرى تسببت في تهيجه .
خطأ <input type="radio"/>	صحيح <input type="radio"/>	5. الأشخاص الذين يعانون من مرض الزهايمر يستجيبون أفضل مع التعليمات البسيطة والتي تعطى خطوة واحدة في وقت واحد.
خطأ <input type="radio"/>	صحيح <input type="radio"/>	6. عندما يجد مريض الزهايمر صعوبة في الاعتناء بنفسه ، يجب على مقدمي الرعاية تولي الأمر فوراً.
خطأ <input type="radio"/>	صحيح <input type="radio"/>	7. في حال كان مريض الزهايمر في حالة يقظة وقلق ليلا ، فإن قيامه بنشاط بدني مكثف أثناء النهار يعتبر إستراتيجية جيدة .
خطأ <input type="radio"/>	صحيح <input type="radio"/>	8. في حالات نادرة، قد يشفى المصابون من مرض الزهايمر.
خطأ <input type="radio"/>	صحيح <input type="radio"/>	9. المصابون بمرض الزهايمر قبل المراحل المتقدمة يمكن أن يستفيدوا من العلاج النفسي للاكتئاب والقلق .
خطأ <input type="radio"/>	صحيح <input type="radio"/>	10. عند ظهور مشكلة في الذاكرة واضطراب التفكير بشكل مفاجئ ، على الأرجح أنها بسبب مرض الزهايمر.
خطأ <input type="radio"/>	صحيح <input type="radio"/>	11. معظم مرضى الزهايمر يعيشون في بيوت التمريض أو المستشفيات.
خطأ <input type="radio"/>	صحيح <input type="radio"/>	12. . سوء التغذية يمكن أن تجعل من أعراض مرض الزهايمر أسوأ.

خطأ	صحیح	13. الاشخاص في سن الثلاثينات قد يصابون بمرض الزهايمر .
خطأ	صحیح	14. المصابون بمرض الزهايمر يصبحون أكثر عرضة للسقوط كلما زاد المرض سوءا .
خطأ	صحیح	15. عندما يكرر المصابون بمرض الزهايمر نفس السؤال أو القصة مرات عديدة فإنه من المفيد لهم تذكيرهم بأنهم يكررونها .
خطأ	صحیح	16. عندما يصاب الشخص بالزهايمر فإنه يفقد القدرة على اتخاذ قرارات مستنيرة بشأن الرعاية الخاصة به.
خطأ	صحیح	17. عند تقدم المرض، فإن مريض الزهايمر يحتاج ملاحظة وعناية كاملة 24 ساعة .
خطأ	صحیح	18. وجود ارتفاع مستوى الكوليسترول في الدم قد يزيد من خطر إصابة الشخص بمرض الزهايمر.
خطأ	صحیح	19. اهتزاز أو رجفة اليدين أو الذراعين هو العرض الشائع لدى المصابين بمرض الزهايمر.
خطأ	صحیح	20. أعراض الاكتئاب الحاد يمكن أن تشابه أعراض مرض الزهايمر.
خطأ	صحیح	21. مرض الزهايمر هو نوع من أنواع الخرف.
خطأ	صحیح	22. وجود مشاكل في التعامل مع المال أو دفع الفواتير هي من أكثر الأعراض المبكرة شيوعا في مرض الزهايمر.
خطأ	صحیح	23. أحد الأعراض التي يمكن أن تحدث مع مرض الزهايمر هو اعتقاده بأن الآخرين يسرقون أشياءه .
خطأ	صحیح	24. عندما يستخدم الشخص المصاب بمرض الزهايمر مذكرات تذكره قد يسهم ذلك في تطور المرض وزيادته .
خطأ	صحیح	25. تتوفر الأدوية التي تمنع مرض الزهايمر.
خطأ	صحیح	26. وجود ارتفاع في ضغط الدم قد يزيد من خطر إصابة الشخص بمرض الزهايمر.
خطأ	صحیح	27. الجينات أو الوراثة يمكن فقط أن تساهم بشكل جزئي في حدوث مرض الزهايمر.
خطأ	صحیح	28. إن قيادة السيارة آمنة للأشخاص الذين يعانون من مرض الزهايمر ، طالما لديهم مصاحب في السيارة دائما.
خطأ	صحیح	29. مرض الزهايمر لا يمكن علاجه .
خطأ	صحیح	30. معظم الأشخاص الذين يعانون من مرض الزهايمر يتذكرون الأحداث الحديثة أفضل من الأشياء التي حدثت في الماضي.

- ما هي مصادر معلوماتك عن مرض الزهايمر :

- الأقراب والأصدقاء ○ الجرائد والمجلات ○ التلفاز ○ مواقع الإنترنت الطبية ○ مواقع التواصل الاجتماعي
- الأطباء ○ الدراسة أو مجال العمل ○ ليس لدي أي مصدر
- أخرى :

- هل لديك رغبة في معرفة المزيد عن مرض الزهايمر :

- نعم ○ لا

Appendix 5: Respondents' Knowledge of Alzheimer's Disease

	Correct n (%)	95% CI for %
Risk Factors		
It has been scientifically proven that mental exercise can prevent a person from getting Alzheimer's disease.	102 (16.5)	(13.7 to 19.5)
People in their 30s can have Alzheimer's disease	326 (52.6)	(48.6 to 56.5)
Having high cholesterol may increase a person's risk of developing Alzheimer's disease	302 (48.7)	(44.8 to 52.6)
Prescription drugs that prevent Alzheimer's disease are available	272 (43.9)	(40.0 to 47.8)
Having high blood pressure may increase a person's risk of developing Alzheimer's disease	337 (54.4)	(50.4 to 58.2)
Genes can only partially account for the development of Alzheimer's disease	417 (67.3)	(63.5 to 70.9)
Life Impact		
People with Alzheimer's disease are particularly prone to depression	422 (68.1)	(64.3 to 71.6)
Most people with Alzheimer's disease live in nursing homes	462 (74.5)	(71.0 to 77.8)
It is safe for people with Alzheimer's disease to drive, as long as they have a companion in the car at all times	365 (58.9)	(55.0 to 62.7)
Assessment and Diagnosis		
When a person with Alzheimer's disease becomes agitated, a medical examination might reveal other health problems that caused the agitation	512 (82.6)	(79.4 to 85.4)
If trouble with memory and confused thinking appears suddenly, it is likely due to Alzheimer's disease	369 (59.5)	(55.6 to 63.3)
Symptoms of severe depression can be mistaken for symptoms of Alzheimer's disease	348 (56.1)	(52.2 to 60.0)
Alzheimer's disease is one type of dementia	482 (77.7)	(74.3 to 80.9)
Course		
After symptoms of Alzheimer's disease appear, the average life expectancy is 6 to 12 years	244 (39.4)	(35.6 to 43.2)
In rare cases, people have recovered from Alzheimer's disease	260 (41.9)	(38.1 to 45.8)
A person with Alzheimer's disease becomes increasingly likely to fall down as the disease gets worse	429 (69.2)	(65.5 to 72.7)
Eventually, a person with Alzheimer's disease will need 24-hour supervision	493 (79.5)	(76.2 to 82.6)
Caregiving		
People with Alzheimer's disease do best with simple, instructions given one step at a time.	477 (76.9)	(73.5 to 80.1)

When people with Alzheimer's disease begin to have difficulty taking care of themselves, caregivers should take over right away	(114 (18.4)	(15.5 to 21.6)
If a person with Alzheimer's disease becomes alert and agitated at night, a good strategy is to try to make sure that the person gets plenty of physical activity during the day	467 (75.3)	(71.8 to 78.6)
When people with Alzheimer's disease repeat the same question or story several times, it is helpful to remind them that they are repeating themselves	320 (51.6)	(47.7 to 55.5)
Once people have Alzheimer's disease, they are no longer capable of making informed decisions about their own care	233 (37.6)	(33.8 to 41.4)
Treatment		
People whose Alzheimer's disease is not yet severe can benefit from psychotherapy for depression and anxiety	498 (80.3)	(77.1 to 83.3)
Poor nutrition can make the symptoms of Alzheimer's disease worse	434 (70)	(66.3 to 73.5)
When a person has Alzheimer's disease, using reminder notes is a crutch that can contribute to decline	294 (47.4)	(43.5 to 51.4)
Alzheimer's disease cannot be cured	302 (48.7)	(44.8 to 52.6)
Symptoms		
Tremor or shaking of the hands or arms is a common symptom in people with Alzheimer's disease	268 (43.2)	(39.4 to 47.1)
Trouble handling money or paying bills is a common early symptom of Alzheimer's disease	413 (66.6)	(62.8 to 70.2)
One symptom that can occur with Alzheimer's disease is believing that other people are stealing one's things	412 (66.5)	(62.7 to 70.1)
Most people with Alzheimer's disease remember recent events better than things that happened in the past	331 (53.4)	(49.5 to 57.3)