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Assessment of awareness, information of latest Alzheimer sickness studies and treatments among health-related students in Umm Al-Qura University, Makkah city a cross-sectional study

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ABSTRACT

Background: Alzheimer's disease (AD) is considered as the most dominant neurodegenerative disease that destructs neuronal brain cells. Globally, the prevalence of AD has increased in the last decades; accounting for fifty million new cases per year with ten million new people diagnosed each year. This survey based study aimed to determine the level of knowledge and awareness of the recent management of AD among health related students at Umm Al Qura University (UQU), Makkah city. *Methods:* From June 2021 to August 2021, students were given an online survey to complete. An adequate statistical analysis was performed once the data was collected. *Results:* In total, 392 students from the second to the sixth year took part in the survey. A majority of the students (69.13%) were between the ages of 21 and 23, and a little over half (54.6%) were male. The percentage of responses from medical students was highest (39%), coming from those in their fifth year of school. Most students (81.89%) had only a basic understanding of the available treatments for AD, and only 17.86% had a moderate level of knowledge. In contrast, only 0.26 percent was considered to have a high level of knowledge. *Conclusions:* Further studies and educational programs are needed to improve healthcare students' understanding of Alzheimer's disease.

Keywords: Knowledge, awareness, neurology, Alzheimer's disease, healthcare students, Umm Al Qura University, medical students.

1. INTRODUCTION

Alzheimer's disease (AD) is the most dominant neurodegenerative disease that devastates neuronal cells in the brain and is the most predominant cause of underlying dementia (Mayo Clinic, 2021). Biologically, AD is characterized by the accumulation of tau-containing NFT (neurofibrillary tangles) and amyloid-β-containing plaques resulting in reduced thought process and memory (Soria et al., 2019; Tiwari et al., 2019; Soria et al., 2019; Tiwari et al., 2019). Globally, the prevalence of AD has increased in the last decades, accounting for fifty million, with ten million new cases per year. The life time prevalence of AD in Saudi Arabia is one hundred thirty thousand (WHO, 2020). AD progression is very fast without proper treatment resulting in continuous psychological difficulties and worsening memory (NIH, 2019). These difficulties include personal and behavioral changes, getting lost, and problems performing daily activities, which affect significant parts of the society resulting in less productivity and more dependence on others (NIH, 2019). Most current treatments of AD delay the progression of the disease, including anti-cholinesterase, such as rivastigmine, galantamine, and donepezil. In addition, the N-Methyl-D-aspartate receptor antagonist (memantine) can also be used in some cases (Davidson, 2018).

A few recent studies developed novel treatments for AD that act on the exact pathophysiology of AD, such as anti-β-amyloid and anti-tau therapy which can improve and remit the patients' symptoms (Weller and Budson, 2018). A study has shown a lack of knowledge in neuro clinical signs overall (Abulaban et al., 2015). Accordingly, this study hypothesized a lack of awareness among healthcare students at UQU in Makkah. Therefore, our study aims to assess the awareness of the knowledge and recent treatments of AD among healthcare students at Umm Al Qura University.

2. SUBJECTS AND METHODS

Study design and participants

This is a Unicenter cross sectional survey based conducted among health related departments in UQU from June 2021 to August 2021.

Sample size and methods

Using convenience sampling methods, we calculated the sample size using the software of Open epi (Dean et al., 2020). To obtain 95% confidence and a 5% acceptable error margin covering health related departments in UQU, a study design effect of 2 and 10% added sample to cover for incomplete participation, we needed 379 participants.

Study procedure

Descriptive electronic questionnaires were employed using the Google platform to collect data among healthcare students about knowledge and recent treatments of AD. This survey consists of two main parts. Firstly, socio-demographic data, including age, gender, college, and academic year, were obtained and gathered. In light of the current literature, we adopted the second part of the survey from published articles (Al Arifi, 2020), and it was modified and validated by neurologists. A total of 23 questions were included with true and false, and one point was assigned for a correct answer while zero points for each incorrect answer.

Ethical consideration

After granting IRB from the institutional research board of UQU in 2021, relying upon the Declaration of Helsinki's principles, the electronic survey link was sent to the healthcare students using their phone numbers or WhatsApp, and online informed consent was obtained before accessing the form.

Statistical analysis

The collected data were maintained in a Microsoft XL sheet, followed by an analysis of the data. The variables were checked and entered into a computer system, and statistical analyses were performed using SPSS version 23 (SPSS, Inc, Chicago, IL). The frequency was employed for categorical variables. Chi-square was used to compare categorical variables. For this study, the P-value was set to $P < 0.05$ for statistical significance. The data was coded and entered into the SPSS program and then analysed using a modified Bloom's criterion scoring system. One was provided for "yes," zero was given for "no" and "don't know," and one was given for knowledge of genetic testing. The final classification was made using the following categories: 80% and 100% were considered good, 50% and 79% were considered moderate, and less than 50% were considered poor (Seid and Hussen, 2018).

3. RESULTS

This survey targeted health related students in UQU. A total of 392 students were enrolled in this survey with age mean of 22.2 (SD=1.33) (Table 1), while most of the responses were from students 22, 23, and 21-year-old (28.57%, 21.43%, and 19.13%, respectively) (Figure 1). Males and female students showed approximately the same responses with predominant to males (n=214, 54.6%). Most of the answers were from the college of medicine (n=213, 54.3%), followed by the college of applied medical science (12.5%). Furthermore, students from the fifth academic year showing the majority of responses (n=153, 39%), followed by students from the 4th year 18.1% (Table 1). Approximately 61.48% of the healthcare participants did not read recent articles on Alzheimer's disease. In comparison, 30.87% read only one or two articles, 6.38% read more than three articles, 0.77% did know about recent articles, and 0.51% did not answer (Figure 2). Table 2 shows students' responses association in regarding with gender. The immediate action of the caregivers to take care of patients with AD at early stages shows a significant association with gender, particularly among males (P-value, 0.013). Similarly, male students corresponded significantly to common AD symptoms (P-value, 0.030). Furthermore, males and females roughly equal corresponded significantly with the question regarding the curability of AD (P-value, 0.011) (Table 2).

Respectively, the college of medicine corresponded significantly with the immediate action of the caregivers to take care of patients with AD at early stages (P-value, 0.025). Moreover, appearing of neurocognitive function is linked to AD showing correct responses among students in the college of medicine (P-value, 0.009). Additionally, common AD symptoms corresponded significantly among students in the college of medicine (P-value, 0.020). Furthermore, recovering some AD cases significantly shows a correct response among college of medicine students (P-value, 0.005). Moreover, the college of medicine corresponded significantly with the questions regarding the curability of AD (P-value, 0.002) (Table 3). Most of the students had a poor level of understanding regarding the AD treatments 81.89%, followed by a moderate level of knowledge 17.86%. However, only 0.26% had a good level of knowledge (Figure 3). Students' demography shows an insignificant association with the knowledge scores (P-value, 0.0583, 0.425, and 0.418, respectively) (Table 4).

Table 1 Demographic data

Variable	Category	%	N
Gender	Male	54.6%	214
	Female	45.4%	178
College	Medicine	54.3%	213
	Dentistry	2.6%	10
	Applied medical sciences	12.5%	49
	Pharmacy	6.6%	26
	Nursing	20.7%	81
	Public Health	3.3%	13
Academic year	2nd year	13.3%	52
	3rd year	14.8%	58
	4th year	18.1%	71
	5th year	39.0%	153
	6th year	8.4%	33
	Intern	6.4%	25
	Age *(mean [SD])*		

Table 2: The association between Participants' responses regarding AD questions and gender

Categories	Responses	Gender		P-value
		Male	Female	
Alzheimer's disease is one type of dementia.	True	167	149	.157
	False	47	29	
People in their 30s can have Alzheimer's disease.	True	99	98	.083
	False	115	80	

After symptoms of Alzheimer's disease appear, the average life expectancy is 6-12 years.	True	116	109	.161
	False	98	69	
Eventually, a person with Alzheimer's disease will need 24-hour supervision.	True	149	137	.103
	False	65	41	
People with Alzheimer's disease do best with simple instructions giving one step at a time.	True	169	148	.296
	False	45	30	
When people with Alzheimer's disease begin to have difficulty taking care of themselves, caregivers should take over right away.	True	167	156	.013*
	False	47	22	
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.	True	85	61	.266
	False	129	117	
A person with Alzheimer's disease becomes increasingly likely to fall down as the disease gets worse.	True	154	137	.259
	False	60	41	
Trouble handling money or paying bills is a common early symptom of Alzheimer's disease.	True	139	118	.781
	False	75	60	
Most people with Alzheimer's disease remember recent events better than things that happened in the past.	True	74	55	.440
	False	140	123	
Poor nutrition can make the symptoms of Alzheimer's disease worse.	True	178	137	.123
	False	36	41	
Once an individual has Alzheimer's disease, they are unable to make well-informed choices regarding their own care.	True	142	115	.717
	False	72	63	
If memory loss and impaired thinking appears suddenly, it is likely due to Alzheimer's disease.	True	91	74	.850
	False	123	104	
A person's risk of getting Alzheimer's disease may rise if they have high cholesterol.	True	106	82	.494
	False	108	96	
A person's risk of developing Alzheimer's disease may be increased by having high blood pressure.	True	118	89	.310
	False	96	89	
People with Alzheimer's disease frequently have tremor, or shaking of the hands or arms.	True	72	79	.030*
	False	142	99	
Alzheimer's disease can only be partially explained by genes.	True	136	106	.417
	False	78	72	
It has been demonstrated by studies that regular mental exercise can protect against Alzheimer's.	True	159	142	.201
	False	55	36	
Rarely, patients with Alzheimer's disease have been able to fully recover.	True	111	93	.941
	False	103	85	
Alzheimer's disease is incurable.	True	133	132	.011*
	False	81	46	
According to the most recent research, Aducanumab (Anti-Amyloid) is a new drug of choice for treating Alzheimer's disease.	True	147	132	.234
	False	67	46	
Have you ever heard about the recent studies that are trying to prove the effectiveness of anti tau on Alzheimer's disease management?	True	78	45	.018
	False	136	133	

The new studies of Alzheimer's disease management are targeting the main pathologies of the disease: neurofibrillary tangles (composed of p-tau) and senile plaques (AB).	True	150	134	.252
	False	64	44	

Table 3: The association between Participants' responses regarding AD questions and participants' collage

Categories	Responses	Collage						P-value
		Medicine	Female					
One form of dementia is Alzheimer's disease.	True	169	7	41	23	64	12	.619
	False	44	3	8	3	17	1	
Alzheimer's disease can affect a people in their 30s.	True	99	6	27	12	44	9	.462
	False	114	4	22	14	37	4	
The typical life expectancy is between 6 and 12 years after the onset of Alzheimer's disease symptoms.	True	135	5	24	10	42	9	.066
	False	78	5	25	16	39	4	
Alzheimer's patients eventually require 24 hour supervision.	True	159	6	36	18	60	7	.578
	False	54	4	13	8	21	6	
Simple instructions that are given one step at a time are appropriate for those with Alzheimer's disease.	True	175	9	33	23	66	11	.176
	False	38	1	16	3	15	2	
Caregivers should take over as soon as a person with Alzheimer's disease starts having difficulty with taking care of themselves.	True	168	6	43	26	68	12	.025*
	False	45	4	6	0	13	1	
It can be beneficial to point out that people with Alzheimer's disease are repeating themselves when they ask the same question or tell the same tale multiple times.	True	74	4	17	14	33	4	.485
	False	139	6	32	12	48	9	
As the disease progresses, an individual with Alzheimer's disease is more susceptible to getting worse.	True	155	7	42	17	60	10	.438
	False	58	3	7	9	21	3	
One typical early sign of Alzheimer's disease is difficulty managing money or paying bills.	True	138	8	27	19	58	7	.296
	False	75	2	22	7	23	6	
The majority of Alzheimer's patients recall recent experiences more clearly than past ones.	True	67	5	18	12	23	4	.455
	False	146	5	31	14	58	9	
Alzheimer's disease symptoms can get worse if patients have poor nutrition.	True	169	8	42	21	65	10	.951
	False	44	2	7	5	16	3	

Once an individual has Alzheimer's disease, they are unable to make well-informed choices regarding their own care.	True	135	9	37	19	51	6	.140
	False	78	1	12	7	30	7	
If memory loss and impaired thinking appears suddenly, it is likely due to Alzheimer's disease.	True	78	6	29	13	30	9	.009*
	False	135	4	20	13	51	4	
A person's risk of getting Alzheimer's disease may rise if they have high cholesterol.	True	109	4	22	11	38	4	.665
	False	104	6	27	15	43	9	
A person's risk of developing Alzheimer's disease may be increased by having high blood pressure.	True	113	6	25	16	41	6	.918
	False	100	4	24	10	40	7	
People with Alzheimer's disease frequently have tremor, or shaking of the hands or arms.	True	68	3	25	8	40	7	.020*
	False	145	7	24	18	41	6	
Alzheimer's disease can only be partially explained by genes.	True	127	7	26	17	56	9	.469
	False	86	3	23	9	25	4	
It has been demonstrated by studies that regular mental exercise can protect against Alzheimer's.	True	154	9	41	25	63	9	.069
	False	59	1	8	1	18	4	
Rarely, patients with Alzheimer's disease have been able to fully recover.	True	99	7	20	20	49	9	.005*
	False	114	3	29	6	32	4	
Alzheimer's disease is incurable.	True	161	5	33	11	47	8	.002*
	False	52	5	16	15	34	5	
According to the most recent research, Aducanumab (Anti-Amyloid) is a new drug of choice for treating Alzheimer's disease.	True	151	7	42	20	51	8	.120
	False	62	3	7	6	30	5	
Have you ever heard about the recent studies that are trying to prove the effectiveness of anti tau on Alzheimer's disease management?	True	76	5	13	4	21	4	.146
	False	137	5	36	22	60	9	
The new studies of Alzheimer's disease management are targeting the main pathologies of the disease: neurofibrillary tangles (composed of p-tau) and senile plaques (AB).	True	159	6	38	20	53	8	.420
	False	54	4	11	6	28	5	

Table 4 The association between participants' demography and knowledge score					
Variable	Category	Level of knowledge			P-value
		Good level of knowledge	Moderate level of knowledge	Poor level of knowledge	
Gender	Male	1	40	173	.583
	Female	0	30	148	
College	Medicine	1	46	166	.425
	Dentistry	0	1	9	
	Applied medical sciences	0	6	43	
	Pharmacy	0	0	26	
	Nursing	0	15	66	
	Public Health	0	2	11	
Academic year	2nd year	0	3	49	.418
	3rd year	0	8	50	
	4th year	0	15	56	
	5th year	1	33	119	
	6th year	0	5	28	
	Intern	0	6	19	

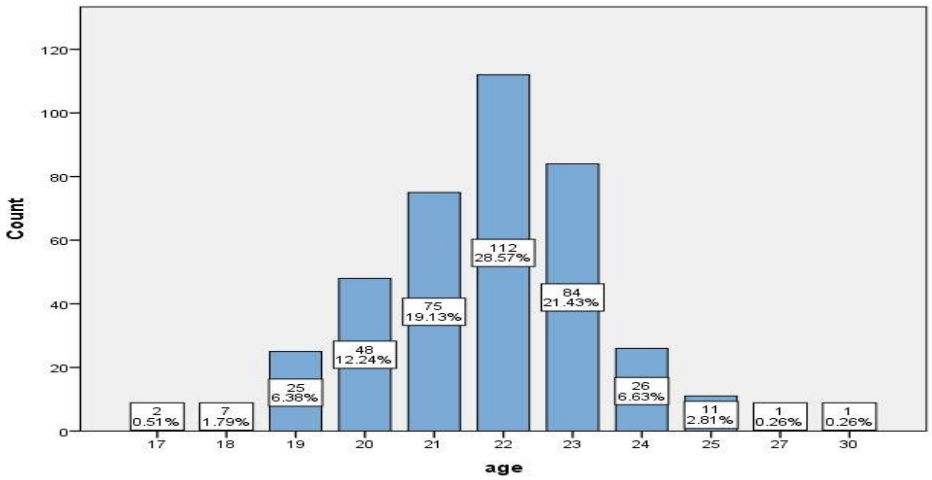

Figure 1 Participants' age frequency

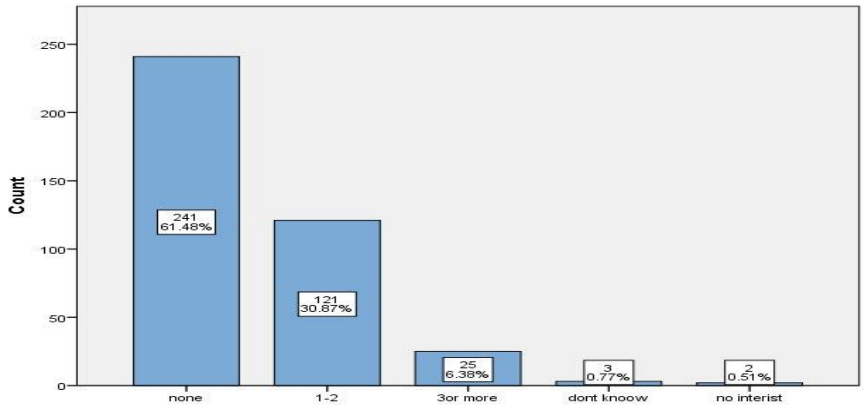

Figure 2 Number of recent articles of AD read by students

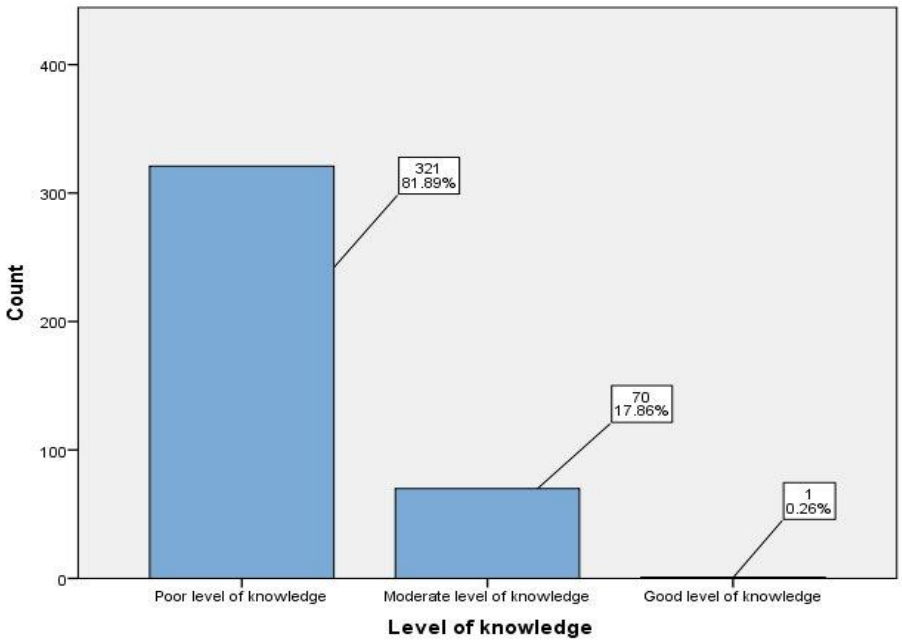

Figure 3 Knowledge score

4. DISCUSSION

This current study was performed to assess healthcare students' knowledge of Alzheimer's disease. Outcomes of this study indicated that the healthcare students had moderate knowledge about Alzheimer's. Numerous previous studies showed that deficiency of knowledge is widespread among healthcare students (Nagle et al., 2013; Scerri et al., 2017; Sharma et al., 2018). Our study also found variations in the knowledge among healthcare students about different aspects of Alzheimer's disease. These variations were also observed at the level of gender difference in some basic questions; for example, male students who understand that "when Alzheimer's patients begin to have difficulties, caregivers shouldn't take over immediately" are significantly more than female students. Our findings are similar to several lines of evidence reported from Saudi Arabia, the UK, Nepal and Australia (Smyth et al., 2013; Sharma et al., 2018; Al Arifi et al., 2020; Kafadar et al., 2021).

The current study assessed the knowledge and recent articles on Alzheimer's disease among healthcare students at a single institute. However, more healthcare institutes in Saudi Arabia are available in different regions with their self curriculum. Hence, national level studies among various universities would provide a better picture. Unfortunately, despite those multiple institutions, there was a lack of awareness about knowledge and recent treatment of Alzheimer's disease among healthcare students at Umm Al Qura University (UQU). The main limitation of the study was its small sample size.

The data set was insufficient to consider our result for the whole western region. Therefore, the results may not be generalized to all people beyond Saudi Arabia's population.

5. CONCLUSION

This study demonstrates an overall poor level of understanding regarding Alzheimer's disease. Furthermore, this study's outcomes showed variations in health related students' knowledge about Alzheimer's disease that must be assessed and improved before they practice as physicians. Hence, continuous education is needed to improve healthcare students' understanding of Alzheimer's disease. Additionally, a study with a larger sample size is required to validate the effectiveness of Alzheimer's disease knowledge programs.

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Ethical Consideration

The study was approved by the biomedical ethics committee in Umm Al Qura university, College of medicine, Makkah, Saudi Arabia (Ethical approval number: HAPO-02-K-012-2021-11-842).

Informed Consent

Electronic consent was obtained from all participants included in this study.

Author Contribution

Omar Mohammad babateen, Jamil Adnan Samkari, Abdullah Ahmad Tawakul: Questionnaire validation and manuscript reviewing.
Abdullah Ahmed Alsubhi, Faris Yaser Bahakeem, Nasser Mansur Al Shanbari: Manuscript writing.
Muhanna Musaad Almatrafi, Salem Bakr Basulayman, Muath Mohammed Alzahrani: Survey preparing and data collection
Faisal Mohammed Alzubaidi, Abdullah Saad Al-Shanbari, Salah Mohammed, Taha Bakry: Data analysis.

Abbreviation lists: AD: Alzheimer's disease, UQU: Umm Alqura University

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Conflict of interest

The authors declare that there is no conflict of interests.

Data materials availability

Data that support the findings of this research are embedded within the manuscript

REFERENCES AND NOTES

1. Abulaban, Ahmad A, Tahir H Obeid, Hussein A Algahtani, Suleiman M Kojan, Ali M Al-Khathaami, Abdulrhman A Abulaban, Maryam F Bokhari, Anas A Merdad, and Suhaib A Radi. Neurophobia among Medical Students. Neurosciences (Riyadh) 2015; 37–4.
2. Arifi, Mohamed N Al. Evaluation of Knowledge of Alzheimer Disease among Health University Students in Riyadh, Saudi Arabia. Saudi Pharm J 2020; 911–15. doi: 10.1016/j.jsps.2020.06.011.
3. Davidson, Stanley, Davidson S. Davidson's Principles and Practice of Medicine 2018; www.elsevier.com/books/davidsons-principles-and-practice-of-medicine/ralston/978-0-7020-7028-0%0A.
4. Kafadar, Aysegul Humeyra, Christine Barrett, Kei Long Cheung. Knowledge and Perceptions of Alzheimer's Disease in Three Ethnic Groups of Younger Adults in the United Kingdom. BMC Public Health 2021; 21(1):1124. doi: 10.1186/s12889-021-11231-8.
5. Mayo Foundation for Medical Education and Research "Dementia," 2021; www.c.org/diseases-conditions/dementia/symptoms-causes/syc-20352013.
6. Nagle, Brian J, Paula M Usita, Steven D Edland. United States Medical Students' Knowledge of Alzheimer Disease. J Educ Eval Health Prof 2013; 10:4. doi: 10.3352/jeehp.2013.10.4.
7. National Institutes of Health. Alzheimer's Disease Fact Sheet 2019; www.nia.nih.gov/health/alzheimers-disease-fact-sheet.
8. Scerri, Charles. Knowledge of Alzheimer's Disease and Training Needs in Final Year Medical and Pharmacy Students. J Aging Res Clin Practice 2017; 9–13. doi: 10.1016/j.jsps.2020.06.011.
9. Seid, Mohammed Assen, Mohammed Seid Hussen. Knowledge and Attitude towards Antimicrobial Resistance among Final Year Undergraduate Paramedical Students at University of Gondar, Ethiopia BMC Infect Dis 2018; 8(1):312. doi: 10.1186/s12879-018-3199-1.
10. Sharma, Rachana, Subhash Chandra Sharma, Sudarshan N Pradhan, Pratikshya Chalise, Luna Paudel. Knowledge of Alzheimer's Disease Among Medical Students of a Medical College. J Nepal Med Assoc 2018; 666–69.
11. Smyth, Wendy, Elaine Fielding, Elizabeth Beattie, Anne Gardner, Wendy Moyle, Sara Franklin, Sonia Hines, Margaret MacAndrew. A Survey Based Study of Knowledge of Alzheimer's Disease among Health Care Staff. BMC Geriatrics 2013; 13:2. doi: 10.1186/1471-2318-13-2.
12. Soria Lopez, Jose A, Hector M González, Gabriel C Léger. Alzheimer's Disease. Handb Clin Neurol 2019; 231–55. doi: 10.1016/B978-0-12-804766-8.00013-3.
13. Tiwari, Sneham, Venkata Atluri, Ajeet Kaushik, Adriana Yndart, Madhavan Nair. Alzheimer's Disease: Pathogenesis, Diagnostics, and Therapeutics. Int J Nanomedicine 2019; 5541–54. doi: 10.2147/IJN.S200490.
14. Weller, Jason, Andrew Budson. Current Understanding of Alzheimer's Disease Diagnosis and Treatment. F1000 Res 2018; 1161. doi: 10.12688/f1000research.14506.1.
15. World health orgnization "Dementia," 2020; www.who.int/news-room/fact-sheets/detail/dementia.