



Dementia Knowledge among Female College Students from a Collectivistic Society Transitioning to a Neoliberal Model

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Abstract

Dementia is a progressive neurocognitive disorder that mostly affects individuals in old age. Knowledge of dementia among young people is critical for early detection and adequate home care of those who are suffering from this devastating disorder. In a society with strong collectivistic roots, such as Saudi Arabia, taking care of the elderly members of one's collective, including those who may be suffering from dementia, is a key responsibility of its youth. The present study was guided by the assumption that a precondition for fulfilling this responsibility is knowledge among younger members of the symptoms of dementia and its treatment. Under this assumption, the study surveyed female undergraduate students' awareness of dementia, as the patriarchal roots of the Saudi Arabian society place women in the role of primary care providers. Through the Dementia Knowledge Assessment Scale (DKAS-A), the study identified two distinct knowledge-level groups among young Saudi Arabian female students (age range: 18-28): either low or moderate. Contact with an older adult with dementia was not accompanied by greater knowledge, except for information about causes and characteristics. These findings suggest that extracurricular activities, such as workshops and talks, are needed to ensure early detection of dementia in the communities where older and younger individuals live.

Keywords: dementia awareness; Saudi Arabia; social change; undergraduate students; young women

1. Introduction

Dementia is the clinical syndrome characterized by impairments in cognitive and emotional information processing (e.g., memory loss, mood changes, and difficulties in judgment, orientation, problem-solving, planning, and language), which are severe enough to interfere with daily functioning and one's quality of life (Arvanitakis et al., 2019). Besides ageing, genetics, medical conditions, and lifestyle choices can increase the risk of dementia (Wong et al., 2020). Not surprisingly, the prevalence of dementia among older people has increased worldwide (Cao et al., 2020). Early detection of this life-limiting cognitive condition is critical to the provision of adequate care. The level of knowledge of dementia (i.e., its etiology, symptoms, and time course) possessed by not only general practitioners, health service workers, and caregivers, but also members of the communities where older adults reside, is considered particularly important for early detection (Maki & Yamaguchi, 2014). Indeed, the greater a person's exposure to an older adult performing quotidian tasks, the greater are the opportunities for observing unusual behavioral changes, thereby avoiding false alarms or misses in reporting dementia cases. It follows that community members who have frequent and extended interactions with older adults can play a critical role in the effectiveness of early detection of the disorder.

In a collectivistic society, such as that of Saudi Arabia, relationships within one's extended family include multiple generations. Relationships between younger and older people are generally close and mutually beneficial. In a collectivistic ecosystem, each person's self is viewed as interdependent, being defined relative to others. Such a self is characterized by empathy and is concerned with belongingness and reciprocity (Hanssen & Tran, 2019). Thus, relationships within one's extended family prioritize values of loyalty, empathy, altruism, and trust, and may even include friends and neighbors. In this context, adults are expected to attend to, guide, and protect the younger members of their collective. As adults age, their role in the development of younger members may slowly dissipate if signs of physical and/or psychological impairment emerge. That is, their role switches from assisting to being assisted. Young adults play a key role in this role transition. Due to their close relationships with older adults, they can detect early signs of cognitive, affective, and physical declines that can guide the timely delivery of adequate care. Of course, young adults' awareness of the symptomatology of dementia as a distinct condition from normal ageing is an essential ingredient to early detection, even in close relationships. It may prevent the normalization and the ensuing discounting of symptoms of cognitive and affective impairments observed in an elder's behavior as the unavoidable result of normal aging (Mahoney et al., 2005).

1.1 The Present Study

Our research focuses on young women's knowledge of dementia. The reason is based on Saudi Arabia's socio-cultural history. It is known as a society with a strict patriarchal past embedded in a collectivistic framework, whereby women are expected to play a prominent role as informal caregivers (Alrashed, 2017). Yet, in recent times, Saudi Arabia has embraced a very public modernization agenda based on neoliberal principles (i.e., 2030 Vision) whose goal is to diversify its economy, making it sustainable. Modernization has led to an expansion of urban areas, promoted women's participation in the labor market, and fostered a conversion of extended families into nuclear families (Al-Khreif et al., 2020). It has commanded substantial changes in the lives of women, especially those of college age, who, along with young men, are now expected to be the primary contributors to the new economy. Furthermore, modernization, dictated by a neoliberal agenda, has infused the country's social fabric with individualistic themes, favoring a self that is independent rather than interdependent, and a sense of agency that emerges from the individual rather than resting on

the community to which the individual is linked (Pilotti et al., 2021; Pilotti & Waked, 2024). Greater independence may be accompanied by less accountability to members of one's family and of the larger community in which one lives, which may nourish a culture devoid of empathy toward those in need of care, including the elderly and the disabled (Al-Khraif et al., 2020).

In this context of change, women have gained rights to education and employment, previously the sole domain of men, but at the expense of the social cohesion of the extended family (Al-Khraif et al., 2020). As a result, questions exist about the extent to which relationships involving the young and the old have weakened. Moreover, modernization has not suddenly wiped out the archaic gender stereotypes that have relegated women's roles to the home. Women are still expected to serve as the primary caregivers when an elderly member of their communities experiences declines in daily functioning, even though their obligations outside the house, as members of the workforce, have increased (Alrashed, 2017). In cases of incipient dementia, effective caregiving heavily rests on family members' clinical knowledge of dementia symptoms and treatment behaviors. It is this knowledge that allows family members to detect subtle changes in an older adult's daily functioning and that prevents them from discounting such changes as the byproduct of normal ageing. Thus, in the present study, we survey young female undergraduate students who epitomize the prototypical models of the Saudi Arabian workforce of the new economy. We assess their clinical knowledge of dementia through the Dementia Knowledge Assessment Scale (DKAS; Annear et al., 2017) presented in Arabic (DKAS-A; Ahmad et al., 2025).

The study is guided by the underlying assumption that the social fabric of Saudi Arabia is changing due to the promotion of individualistic motives within the neoliberal economic framework of the 2030 Vision (Al-Beraidi, 2018). Specifically, it is assumed that if the social ties between the young and the old have indeed weakened, contacts between generations that can inform the detection of dementia cases will be reduced. In this context, misconceptions are likely to abound (e.g., dementia symptoms are part of normal ageing) and trustworthy knowledge may suffer as a result.

The rationale upon which the present study rests is that, at present, there is no effective treatment for dementia. Thus, attention must be devoted to prevention, timely diagnosis, and care. Among the general public, dementia knowledge plays a key role in the prevention, detection, and care of individuals affected by this disorder. Our study opens a window into a slice of that public: a cohort of young females who are not pursuing degrees in health sciences. It is believed that understanding the knowledge of dementia among such young adults is a necessary step for determining the nature of educational interventions intended to foster trustworthy knowledge and eliminate barriers to adequate prevention and timely care. Educational interventions are particularly needed in the Middle East, including Saudi Arabia, where the number of elderly citizens has increased and risk factors, such as diabetes, obesity, and hypertension, have become pervasive (Alsalem et al., 2024). The following questions are asked regarding dementia knowledge, each followed by a hypothesis to be tested:

Does knowledge of dementia differ between young women who have had contact with an older adult who experiences dementia-linked impairments and those who have not had any contact? Evidence indicates that knowledge of dementia increases with direct contact with individuals affected by it (Al-Awad et al., 2024; Pacifico et al., 2022). However, if the social ties between the young and the old have indeed weakened, contact may be superficial and limited in scope. Thus, it is predicted that no significant differences in dementia knowledge will be detected between young women who have encountered older adults suffering from dementia and those who have not had this experience (H-1).

Overall, what is the dementia knowledge of young female undergraduate students? Around the world, evidence exists about people's inability to recognize the difference between early symptoms of dementia and changes due to normal healthy aging (Al-Awad et al., 2024; Bond et al., 2005). In Saudi Arabia, the few studies that have examined dementia knowledge in young adults have reported deficiencies. For instance, in a sample of 400 male and female young adults (19-25 years of age) with varying educational levels, Algethami et al. (2019) have found misconceptions and limited awareness of the symptomatology of dementia. Even among young medical students (18-25 years of age; Aldharman et al., 2023) and primary physicians (younger than 30 years of age; Alsalem et al., 2024), knowledge has been reported to be equally inadequate. At present, it is unclear whether societal changes have further seeped into the social fabric of Saudi Arabia to alter the knowledge possessed by young female undergraduate students whose coursework does not include instruction about dementia. If the earlier pattern of findings has remained unchanged, it is predicted that knowledge will be low or at most moderate among the selected sample of undergraduate students (H-2).

2. Method

2.2 Participants

The participants were 606 Saudi Arabian female undergraduate students whose ages ranged from 18 to 28 ($M = 19.79$; $SD = 1.62$). They constituted a purposive sample of undergraduate students enrolled in mandatory general education courses at a Saudi Arabian university that did not offer coursework or degrees in health sciences. Participants were pursuing degrees in engineering, computer science, business, architecture, and law. The primary reason for choosing these particular university students was that their regular coursework did not cover knowledge and skills in health sciences, thereby excluding dementia from required instructional material. Participants were Arabic-English bilingual speakers who had attained at least a competent-user score on standardized English proficiency tests before enrollment. Institutional data classified the socio-economic status of their family as middle class (Derouez et al., 2023). As such, participants were intended to represent a slice of the general public that the 2030 Vision contemplates to be the female workforce of the new economy. Purposive sampling led to a response rate was 98% (i.e., participants who participated / participants asked to participate).

2.3 Procedure and Materials

At the start of the Spring semester, the DKAS-A (Ahmad et al., 2025) was administered to female Saudi Arabian students enrolled in general education courses to obtain a sample of undergraduate students across all majors and educational levels offered by the selected institution. Written informed consent was obtained prior to participation. The scale was described as containing 25 statements. Each statement fell into one of four dimensions [Cronbach's Alpha (α) = 0.83-0.73]: *causes and characteristics* (i.e., etiology and terminal course of the disorder), *communication and behavior* (i.e., how an individual affected by dementia interacts with the surrounding world), *care considerations* (i.e., symptoms that are relevant to the delivery of care), and *risks and health promotion* (i.e., physical and psychological conditions that correctly or incorrectly are used to account for the occurrence of dementia). Responses to each statement required participants to select among 5 options: 'true', 'probably true', 'probably false', 'false', and 'I do not know'. For each of the 14 false statements of the scale, a participant received 2 points for a correct answer ('false') and 1 point for a less confident correct answer ('probably false'). Similarly, for each of the 11 true statements of the scale, the participant received 2 points for a correct answer ('true') and 1 point for a less confident correct answer ('probably true'). All wrong responses, including 'I

do not know', were given 0 points. Thus, the scores on all statements of the DKAS-A scale ranged from 0 to 50 (Cronbach's $\alpha = 0.83$). According to Ahmad et al. (2025) and Eccleston et al. (2021), moderate dementia knowledge could be operationally defined as scores around or above 50% correct. Thus, scores substantially below the 50% correct cut point were conceptualized as indexing poor knowledge. A subgroup of 36 individuals completed the scale twice, a few weeks apart, leading to an inter-rater agreement of 98% (i.e., percentage of times that raters assigned the same score to the statements of the DKAS-A). Face validity was also assessed through a separate sample of 10 individuals to ensure the scale's suitability for the selected student population (Allen et al., 2023).

During debriefings, students inquired about the correct answers to particular statements of the DKAS-A. Their spontaneous comments were recorded and anonymized. Comments concerned the widespread admission that the DKAS-A revealed to them that their knowledge of dementia was limited at best. The specific sources of their knowledge were reported to be encounters with either older relatives or family friends with the disorder. Due to privacy concerns, no inquiries were made regarding the extent and quality of the encounters. The data collection process was approved by the Deanship of Research of the hosting university. Written consent was collected before participation. No identifiers were linked to participants in data analyses. The ethical approval was deemed to comply with the guidelines of the Office for Human Research Protections of the U.S. Department of Health and Human Services and with the American Psychological Association's ethical standards for the treatment of research participants.

3. Results

All results submitted to inferential statistics were considered significant at the $p < 0.05$ level. Given the ordinal level of measurement of the DKAS-A, non-parametric descriptive and inferential statistics were adopted for the analyses. For the whole DKAS-A and each of its subscales, percentage correct values were computed, combining certain and uncertain (i.e., probable) correct statements. The median percentage ratings of each subscale of the DKAS-A and of the whole scale were submitted to the Mann-Whitney U test to determine whether knowing a person with dementia would differentiate young females from those who did not have any practical experience with the disorder. Only 136 female students admitted to having met in their community an elderly person with noticeable cognitive difficulties. There were no differences between the two experience groups on any of the subscales [$U_s \leq 35084.00$, ns], except for the subscale devoted to causes and characteristics [$U = 35885.00$, $p = 0.028$, with a mean rank equal to 295.15 for no and 332.36 for yes; Independent-Samples Hodges-Lehmann median difference = $-0.71 - 0.00$]. Tab. 1 contains the descriptive statistics (median, *Med.*, and inter-quartile range, *IQR*) of the participants' scores (percentage correct) in each subscale as well as in the overall scale. The asterisk in the table indicates a significant group difference. H-1 received meager support. The only significant difference was for the dimension 'causes and characteristics' of the DKAS-A, although the median knowledge on this dimension was still below 50% even for the participants with practical experience. Furthermore, the effect size of the group difference was rather small (rank-biserial correlation coefficient = 0.10). Interestingly, the overall DKAS-A scores did not differ between students with practical experience and those without it [$U = 35395.50$, ns].

Table 1: Descriptive statistics of two dementia-experience groups

DKAS-A and its Dimensions	No Experience		Experience	
	<i>Med.</i>	<i>IQR</i>	<i>Med.</i>	<i>IQR</i>
Causes & Characteristics *	36.71%	(28.57)	42.86%	(28.57)
Communication & Behavior	33.33%	(25.00)	33.33%	(33.33)
Care Considerations	50.00%	(41.67)	66.67%	(50.00)
Risks & Health Promotion	33.33%	(18.75)	33.33%	(25.00)
Overall DKAS-A	38.00%	(18.50)	43.00%	(21.50)

A K-Means cluster analysis was carried out to determine whether participants could be organized into knowledge-level groups (elbow method). The analysis, driven by the iterate-and-classify method, yielded two groups (distance between final clusters = 55.85). There was a group with demonstrably low knowledge of dementia across all DKAS-A scales ($n = 355$), and there was another group with barely moderate knowledge ($n = 251$). In these analyses, moderate knowledge was defined as approximately 50% correct responses (Ahmad et al., 2025; Eccleston et al., 2021). Table 2 contains the descriptive statistics (median, *Med.*, and inter-quartile range, *IQR*) of the participants' answers in each subscale, organized by knowledge group. H-2 was supported.

When the scores of each knowledge group were submitted to Friedman's analysis of variance, knowledge in the four domains differed [moderate knowledge group: $\chi^2_r(3, n = 251) = 347.61, p < 0.001$; low knowledge group: $\chi^2_r(3, n = 355) = 85.17, p < 0.001$]. Post hoc comparisons of the rank-ordered participants' answers were adjusted through the Bonferroni correction. In the moderate knowledge group, there were no differences between the dimensions 'communication and behavior' and 'risks and health promotion', which were at the bottom. The remaining dimensions differed from them and from each other [$p \leq 0.013$]. Thus, participants' knowledge could be hierarchically ordered. From the two dimensions at the bottom, participants' awareness was higher for 'cause and characteristics' and was the best for 'care considerations'. In the low knowledge group, there were also no differences between the dimensions 'communication and behavior' and 'risks and health promotion', which were again at the bottom. The knowledge scores of the dimensions 'causes and characteristics' and 'care considerations' were significantly higher than those of the two dimensions at the bottom [$p < 0.001$]. However, the latter dimensions did not differ from each other. Tab. 2 contains the descriptive statistics (median, *Med.*, and inter-quartile range, *IQR*) of the participants' answers in each subscale, organized by knowledge group. In the table, no differences between dimensions are underscored by their sharing the same letter (a, b, and c).

Table 2: Descriptive statistics of two knowledge-level groups

Dimensions of DKAS-A	Moderate Knowledge		Low Knowledge	
	<i>Med.</i>	<i>IQR</i>	<i>Med.</i>	<i>IQR</i>
Causes & Characteristics	50.00 ^b	(21.43)	28.57 ^b	(21.43)
Communication & Behavior	41.67 ^a	(25.00)	25.00 ^a	(16.67)
Care Considerations	83.33 ^c	(25.00)	41.67 ^b	(25.00)
Risks & Health Promotion	41.67 ^a	(25.00)	25.00 ^a	(16.67)

4. Discussion

The results of the present study can be summarized in three points: First, knowledge of dementia organized participants into two groups of uneven sizes: moderate knowledge (41%) and low knowledge (59%). Second, in each of these clusters, knowledge pertaining to particular domains was also uneven. The scores of the ‘communication and behavior’ and ‘the risk and health promotion’ subscales were the lowest. Poor knowledge of information pertaining to the former subscale could be considered particularly detrimental to the ability of the selected participants to serve as effective agents for the early detection of dementia. Instead, the knowledge exhibited on the ‘risk and health promotion’ subscale could be viewed as underscoring participants’ inadequate understanding of modifiable risk factors, thereby precluding actions intended to foster desirable healthy behaviors in themselves as well as in the older adults of their communities. However, the low scores on the ‘risk and health promotion’ subscale could not be considered outliers. They replicated the findings collected from the general public in other parts of the world (Cations et al., 2018; Eccleston et al., 2021; Van Patten & Tremont, 2020).

Third, for both knowledge-level groups, a positive note was delivered by the scores of the subscale ‘care considerations’, which covered participants’ understanding of symptoms that are relevant to the delivery of care. This type of knowledge is critical for ensuring the management of the disorder’s symptomatology by the members of the community to which the affected individual belongs. Yet, the overall less-than-desirable dementia knowledge uncovered in this cohort of female students highlights the need for targeted instruction. Of particular interest is education about the risk factors of dementia. Extracurricular activities covering dementia, and specifically its risk factors, offered by Saudi Arabian universities may benefit the student population as well as the community in which students live. The reasons are obvious. Dementia among older Saudi citizens is not an isolated event but a growing phenomenon. Young women who are under pressure to succeed as members of the workforce of the new economy are likely to face societal expectations for the informal care of the elderly in their extended families. Thus, knowledge of dementia can help them cope with concrete cases. Most importantly, knowledge of healthy ageing and related behaviors may empower women to reduce their own risk of developing dementia. Specifically, it can foster behaviors that can prevent a normal aging process from deteriorating into a diseased one.

The present study has limitations that may be addressed in future research. For instance, as noted in the method section, the university specifically selected for the study did not include health sciences, so that students’ knowledge base, unprompted or not cultivated by the curriculum, could be examined. Yet, it is unclear whether the obtained pattern of results applies to students at other Saudi Arabian universities with similar curricular options. It is also unclear whether young men from the same undergraduate student cohort would display a

similarly limited knowledge of dementia. Past studies have shown women's knowledge to be superior to that of men (Al-Awad et al., 2024; Alhazzani et al., 2020). However, in the Saudi Arabian society, which is undergoing changes in its social fabric, it is difficult to determine whether this pattern of unequal knowledge will persist in the future. Furthermore, stigmas about dementia (Nguyen & Li, 2020) may have limited the opportunities of our participants to access information about it. Students' weak knowledge of the disorder questions the extent to which Islamic principles of compassion, empathy, and support may counteract stigmas (Sharif et al., 2025). Lastly, it is possible that the null differences on most knowledge subscales between participants who reported exposure to individuals suffering from dementia and those who did not report it may be attributed to our participants' narrow range of experiences with older individuals. Privacy issues prevented us from exploring this variable. If this limitation is a reliable sign of the weakening of the social ties between the young and the old in a society moving towards neoliberalism is a matter for a follow-up study. Evidence exists that individualistic motives, relative to collectivistic motives, are on the rise in the quotidian life of Saudi Arabian citizens (Alhazmi & Almashhour, 2024; Jiang et al., 2018). Evidence also exists of a bicultural mindset in which individualistic and collectivistic motives coexist (Alhejaili, 2025; Pilotti et al., 2021; Tawfiq & Ogle, 2024). Of course, the empirical validation of the link between social-level variables and individual-level variables remains an assertion to be put to the test in future research endeavors.

Acknowledgment

This paper is the product of the combined effort of colleagues and students.

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