

Proposing a communication module to enhance dental students' attitudes towards people with dementia: Phase 1 of a curriculum revision study

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Abstract

Introduction: The number of mentally altered patients a dentist meets in practice is increasing and interaction with them can be very challenging. As a baseline for an interventional study, we want to assess the attitude of dental students and identify areas of improvement in patient communication. This work compares the attitude of dental students towards people suffering from dementia to the attitudes of trained medical caregivers and the general population. Our aim is to use the results to assess the need for training in communicating with mentally altered patients.

Materials and Methods: Fourth-year dental students attended two lectures on dementia given by a psychiatrist as part of the geriatric dentistry lecture and were questioned afterwards using the Dementia Attitude Scale. In 2016 and 2017, 73 students at the University of Greifswald were interviewed. The response rate was 84%. Using a factor analysis, the Dementia Attitude Scale's validated questions were interpreted and compared with data from nursing staff from Switzerland and the USA.

Results: The factor analysis of the data showed the same two-factor loadings as the comparative groups, and that dental students' attitude is more comparable to the general population than to medically trained nursing staff.

Conclusion: Given the results, we conclude that the implementation of a communication module can serve in improving the attitude of dental students towards patients with dementia.

KEYWORDS

communication skills, dementia, dental education, psychiatry

1 | INTRODUCTION AND BACKGROUND

In dental practice, we are ever more commonly meeting elderly and mentally altered patients.^{1,2} Next to cardiovascular issues, mental

illness also occurs more often and might impede dental treatment. Above all, the frequency of dementia, for example, Alzheimer's disease, is increasing markedly, which is also directly associated with periodontal disease.³ However, not only elderly and mentally altered

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patients can be stressed in everyday practice, but also younger patients with mental health problems are challenging.⁴ Steinauer et al. describe what makes 'difficult patients' difficult for medical students: medical students described patients as difficult who were angry, uncooperative, disinterested, talked too much or had chronic pain. In those challenging communication situations, students felt frustrated.⁵ The needs of mentally altered patients require a compassionate approach.

Generally, communicating with elderly or mentally altered patients is often a significant challenge,⁶ and the attitude of the population towards older people is often more negative than towards younger people.⁷ But attitudes can change over time or by training, reducing possible fears and prejudices. Jonas-Simpson et al. observed a phenomenological shift in the view professions have of a person with dementia after attending a research-based drama on living with dementia.⁸ Besides, more positive attitudes were found among caregivers and students towards psychologically altered people when they had close contact with dementia patients.^{9,10}

Disease patterns from the psychiatric field are omnipresent in the dental practice: about a quarter of the German population suffers from a mental or psychosomatic disease at some time in their lives.¹¹ Therefore, it is essential to pay attention to psychiatric conditions in addition to basic dental diagnostics. A dentist should look out for clues such as the discrepancy between the patient's description and clinical picture of the complaints, unusual emotional participation, demanding interaction, the coincidence of a drastic life event, or 'doctor hopping'.¹¹ In the year 2000, the prevalence of dementia among women and men aged 65 or older was 7.2% in northeast Germany.¹² In 2010, Siewert et al. forecast an increase in the number of dementia patients by 91.1% in 2020.¹³ Whereas initially only about 1 in 10 was affected by dementia, it is forecast to affect 2 out of 10 patients. Consequently, a higher number of mentally altered or demented patients must be expected in the dental practice. However, many older people have developed strategies to compensate for these deficits under routine circumstances, but they may become apparent in exhausting or stressful situations, such as long dental treatment. Consequently, an appropriate way of communication must be found for each patient.¹⁴

Therefore, dental students should be prepared for contact and communication with these altered patients as early in their academic career as possible. Teaching in this area has been deficient, as is teaching in overall communication skills. Murthy et al. showed that common communication skills are slowly becoming an essential part of dental education, but there are still gaps.¹⁵ Concerning the much more difficult communication with altered patients, Bathla et al. recommended bridging the gap between dentistry and psychiatry by establishing a short training period in psychiatry for dental students.¹⁶

In medical education, courses covering dementia in Europe vary from 3 to 30 hours, as Tsolaki et al. reported. It is taught to medical students in neurology, psychiatry, and geriatrics and is usually supported by pharmaceutical companies and research associations. Training should be more focused on knowledge about the disease

and its treatment methods but communicating with the patient is also of importance.¹⁷ Dental students have no courses in which they are taught about dementia or how to deal with mentally altered patients as shown by a lack of studies in the literature on teaching this subject.

O'Connor and McFadden¹⁸ developed in 2010 the validated Dementia Attitude Scale (DAS) derived from qualitative analysis of structured interviews and tested on two sample groups: college students and certified nursing assistant students. They were able to show that the DAS can differentiate between both groups and to describe a positive association between contact with people with dementia and positive attitudes. Peng et al. translated the DAS questionnaire to German and tested it also for validity. They surveyed a sample of the normal Swiss population and a sample of second-year nursing assistant students who already had contact and experience with people suffering from dementia.¹⁹ As their data shows, they were also able to reproduce the results of O'Connor and McFadden with their translated DAS questionnaire.

2 | AIM

The current study aims to assess the attitude of dental students towards people suffering from dementia, to compare them to the attitudes of trained medical caregivers and the general population using the DAS and to identify areas for improvement in dental education. The findings will inform the development of a communication module to enhance learning outcomes tested with an interventional study and ultimately improve the care of patients with dementia in dental settings.

3 | MATERIALS AND METHODS

This study is the first phase of an interventional study aimed at enhancing learning outcomes related to dementia care in the dental curriculum. The current phase involves administering a questionnaire to assess the attitudes of dental students towards dementia patients, while the subsequent phases will focus on curriculum revision and implementation of interventions to address identified gaps. Dental students attended two introductory lectures (90 min each) at the end of the eighth term, held by a psychiatry professor and his assistant professor. They discussed the psychiatrically altered patient in general as well as the characteristics and peculiarities of patients with dementia. They also taught behavioural coping techniques clues for difficult situations. After completing these lectures, the students answered the DAS. The DAS is a 20-item questionnaire with a seven-level Likert scale.

3.1 | Statistical analysis

The structure of the 20 items of the Dementia Attitude Scale was analysed using principal-component factor analysis with Oblimin rotation

in terms of Stata software syntax (Stata Corporation).¹⁸ For multiple comparisons of the 20 items of the Dementia Attitude Scale, the adjustment proposed by Li and Ji (2005) was carried out, which is more appropriate to the factor structure than the Bonferroni principle. The effective number of independent variables was only 13, resulting in a corrected α_{cor} -level of 0.00394 instead of 0.05/20=0.0025 according to the Bonferroni principle.²⁰

Items 2, 8, 9, 16 and 17 are reverse-scored as in the original publication.¹⁸

3.2 | Comparative data

The data of Peng et al. are based on a survey of a sample of the Swiss general population and a sample of prospective care and health professionals. O'Connor and McFadden's data are based on surveys of a sample of college students and a sample of geriatric caregivers. The factor loading coefficients listed in the Peng et al. and O'Connor and McFadden articles were manually transferred to a Stata data file (version 14.2, StataCorp LLC), controlled by a second investigator, and made available for comparison with the investigator's own data. The comparison on the level of the 20 items to the study of Peng et al. was done on the basis of mean, standard deviation and number of observations using t-tests for independent samples. The graphical representation was done with ggplot2, version 2.2.1 under R 3.4.4.^{21,22}

4 | RESULTS

4.1 | Descriptive statistics

The data were collected in the years 2016 and 2017 from dental students in their fourth year of study. The response rate of the completed questionnaires was 84% ($n=73$). Forty-eight women (65%) and 25 men (35%) took part in the survey. The average age was 26 years (SD=3 years).

TABLE 1 Mean values of the total scores achieved by dental students in the Dementia Attitude Scale compared with Peng et al. (Switzerland). Higher average values correspond to a more positive attitude.

	Dental students	Switzerland	
		General population	Prospective healthcare professionals
	N=71	N=29	N=24
Total score	96.5	99.9	116.4
Sum of the variables of the factor 'social comfort' (1, 2, 3, 4, 6, 8, 9, 13, 16, 17)	43.6	45.3	56.1
Sum of the variables of the factor 'knowledge' (3, 7, 10, 11, 12, 14, 15, 18, 19, 20)	52.9	54.6	60.3

4.2 | Dementia Attitude Scale

Sum scores were calculated for the variables 'social comfort' and 'knowledge'.

Table 1 presents the mean values marked by dental students of the DAS as sum scores compared with those of the general Swiss population and prospective healthcare professionals. The dental students' total score is 96.5, 43.6 for 'social comfort' and 52.9 for 'knowledge'. The prospective healthcare professionals have a higher average value of 20 in the total score compared to the dental students (116.4 vs. 96.5). The difference in the sum scores is higher on the factor 'social comfort' than on 'knowledge' (12.5 vs. 7.4).

When comparing the sums' mean values using the variables of 'social comfort' and 'knowledge', dental students perform similarly to the general Swiss population and achieve lower values than the prospective healthcare professionals. The difference between students and healthcare professionals was more pronounced for the factor 'social comfort' than for the factor 'knowledge', which is analysed in Table 2 and plotted on the item level in Figure 1. The items in Table 2 and Figure 1 are grouped by factor and presented in descending order. It should be noted that some of the items are reverse-scored. Figure 1 shows clearly that the 95% confidence intervals of the dental students and the prospective healthcare professionals overlap only slightly on four items and do not overlap on the other 16 items, indicating the notable difference in attitude between both groups.

The two-factor model proposed by Peng et al. and O'Connor was replicated with our data (Table 3). In our study, the factors knowledge and social comfort explained 29% and 21% of the variance, respectively.

5 | DISCUSSION

Our results, external studies, and direct statistical comparisons with external studies show that the attitude of dental students towards people suffering from dementia is more comparable to the general public than to medically trained nursing staff and aligns with other

TABLE 2 Results of factor analysis and subsequent Oblimin rotation for Greifswald students compared with those of O'Connor and McFadden (USA) and Peng et al. (Switzerland).

	Greifswald Factor		USA Factor		Swiss Factor	
	1	2	1	2	1	2
Factor 'social comfort'						
9. I would avoid an agitated person with ADRD.	-0.03	0.79	0.45	-0.09	0.70	-0.06
6. I feel uncomfortable being around people with ADRD.	0.03	0.75	0.56	-0.06	0.75	-0.15
13. I feel relaxed around people with ADRD.	-0.03	0.71	0.73	-0.07	0.66	0.02
2. I am afraid of people with ADRD.	0.12	0.70	0.48	-0.07	0.60	-0.01
16. I feel frustrated because I do not know how to help people with ADRD.	-0.33	0.65	0.64	0.22	0.42	0.37
4. I feel confident around people with ADRD.	-0.03	0.62	0.73	0.16	0.58	0.14
5. I am comfortable touching people with ADRD.	-0.04	0.57	0.72	0.11	0.74	-0.16
1. It is rewarding to work with people who have ADRD.	0.34	0.52	0.41	0.16	0.52	0.32
17. I cannot imagine caring for someone with ADRD.	0.13	0.50	0.46	0.22	0.57	0.23
8. I am not very familiar with ADRD.	-0.08	0.32	0.55	-0.07	0.64	-0.03
Factor 'knowledge'						
7. Every person with ADRD has different needs.	0.87	0.06	-0.02	0.44	0.34	0.27
15. People with ADRD can feel when others are kind to them.	0.86	0.07	0.23	0.60	0.15	0.53
10. People with DRD like having familiar things nearby.	0.80	-0.12	-0.05	0.55	0.09	0.65
19. We can do a lot now to improve the lives of people with ADRD.	0.77	-0.02	0.25	0.32	-0.16	0.63
11. It is important to know the past history of people with ADRD.	0.74	0.00	-0.17	0.40	-0.01	0.59
18. I admire the coping skills of people with ADRD.	0.72	-0.21	0.29	0.34	-0.13	0.37
12. It is possible to enjoy interacting with people with ADRD.	0.70	0.23	-0.02	0.41	0.44	0.38
20. Difficult behaviours may be a form of communication for people with ADRD.	0.66	-0.15	-0.06	0.53	0.05	0.50
3. People with ADRD can be creative.	0.64	-0.05	0.08	0.52	0.22	0.43
14. I feel frustrated because I do not know how to help people with ADRD.	0.60	0.19	0.28	0.53	0.23	0.43

findings in this field.^{23,24} A broad knowledge base forms the foundation for safe handling. The point is to change the value and knowledge base in order to increase problem-solving and action competence.²⁵ Interestingly, our results show a higher difference on the factor 'social comfort' than on the factor 'knowledge'. Although our students still differ on the factor knowledge from prospective healthcare professionals our main target should be the factor 'social comfort'. Therefore, the ability to communicate with and experience a mentally altered patient could be the key to improvement through a communication module. Our findings are in line with those of Kite et al., who said that attitudes towards older people tend to be burdened by reservations.⁷

The attitude of young dentists towards dementia is comparable to that of the general Swiss population. This similarity can be attributed to the low level of experience of our dental students with patients suffering from dementia. As Zimmermann and Lundquist stated, attitudes were more positive the closer the contact with patients with dementia was.^{9,10} The low level of experience also explains the lower mean values for the sum scores of 'social comfort' and 'knowledge'. Therefore, it is essential to enable students to have more experience and contact with these patients.

The results of our study suggest that dental students may have limited knowledge and relatively negative attitudes towards people

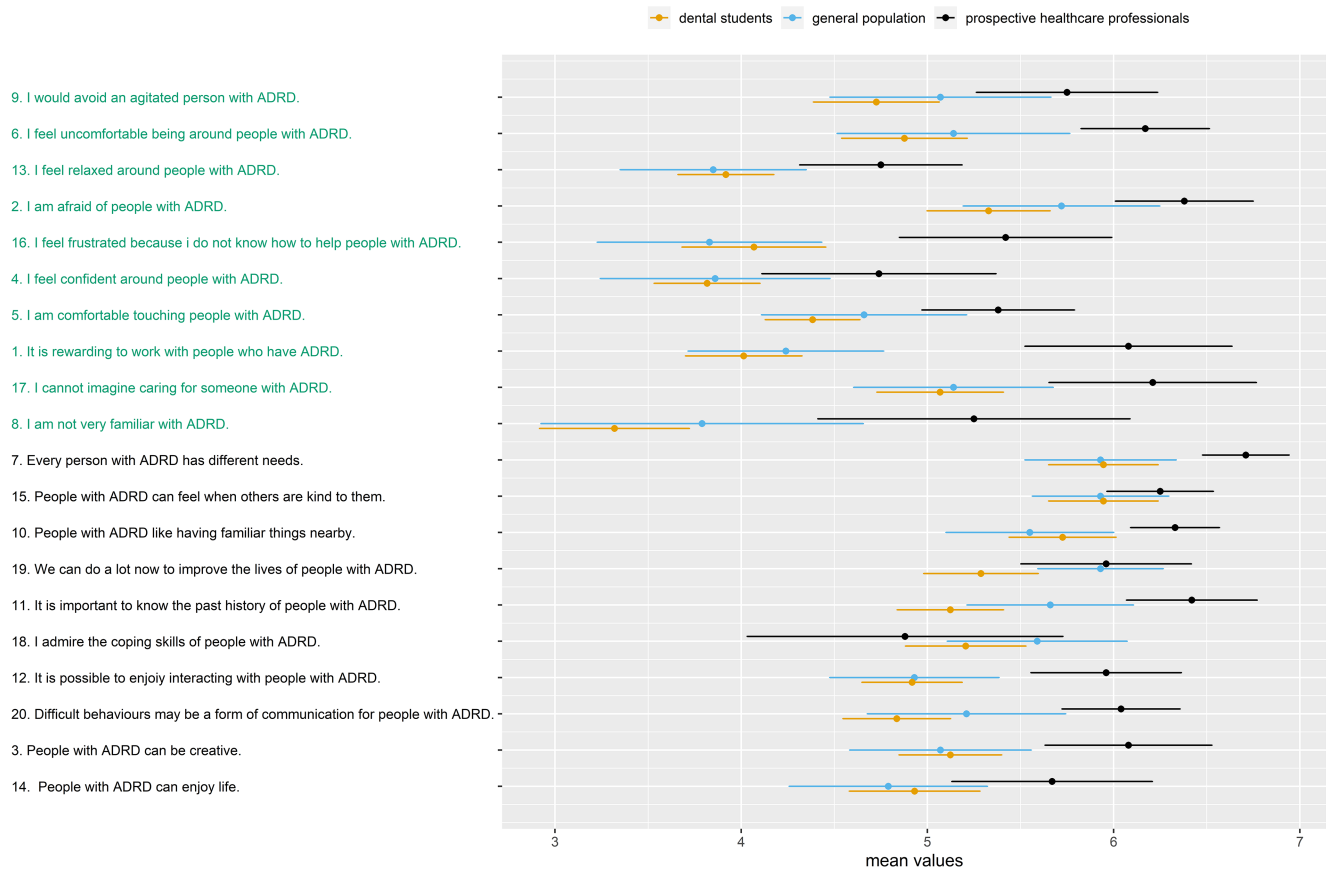


FIGURE 1 Mean values and 95% confidence intervals of the Dementia Attitude Scale scores representing three different groups consisting of our data (dental students), and of Peng et al. (general population and prospective healthcare professionals). ADRD, Alzheimer's disease and related dementias. 3 = slightly disagree; 4 = neutral; 5 = slightly agree; 6 = agree; 7 = strongly agree.

with dementia. This finding is consistent with previous studies that have shown healthcare professionals, including dental professionals, often lack knowledge about dementia and negative attitudes towards people with the disease.^{15,16,26,27} The negative attitudes may be due to a lack of education and training in dementia care.²⁸ They also can have a significant impact on the quality of care provided, as well as on the emotional well-being of both the person with dementia and their caregivers.^{29,30} Therefore, it is important to address relatively negative attitudes towards dementia and improve knowledge among healthcare professionals, including dental students.

Based on the results of the questionnaire and the relevant literature,^{27,31-37} a communication module will be designed to enhance dental students' attitudes towards people with dementia. The module's content will include an overview of dementia and its prevalence, its impact on dental care, common challenges in communication with dementia patients, effective communication strategies and the importance of empathy and person-centred care in managing patients with dementia. The module will also address the students' characteristics that influence their attitudes towards dementia patients, such as age, gender, prior exposure to dementia patients and level of empathy and will also focus on developing students' understanding of the ethical considerations and legal issues in providing dental care

to patients with dementia. To enhance the module's effectiveness, a variety of teaching methods will be employed, including interactive lectures, role-playing exercises, case-based discussions and internships on dementia care units of the university.

As the factor 'social comfort' showed a stronger difference than the factor 'knowledge', we will put emphasis on the direct experience of patients with dementia and indirect through role-play and simulation patients in the structure of our module. A condensed version of this module could also be of interest to dental practitioners for CME.³⁸

To evaluate the effectiveness of the communication module, we plan to conduct an interventional study. The study will involve comparing the attitudes and knowledge of a group of dental students who receive the module with those of a control group who do not. Both groups will complete the same questionnaire before and after the intervention to assess changes in their attitudes and knowledge towards people with dementia. We will also use a pre- and post- OSCE covering the topic of dementia, to gain deeper insights into the effectiveness of the communication module. By using this interventional study design, we aim to provide robust evidence of the efficacy of the communication module in improving dental students' attitudes and knowledge towards people with dementia.

TABLE 3 Comparison of characteristics and distribution between the prospective healthcare professionals (second of three-year training, Peng et al.) and fourth-year dental students.

Factor	Prospective healthcare professionals			Dental students			Comparison ($\alpha_{cor} = 0.00394$)			
	n	Mean	Standard deviation	n	Mean	Standard deviation	Difference	Standard error	Confidence interval	p-value
Factor 'social comfort'										
9. I would avoid an agitated person with ADRD.	24	5.75	1.152	73	4.73	1.446	1.02	0.325	0.38–1.67	.0022
6. I feel uncomfortable being around people with ADRD.	24	6.17	0.816	73	4.88	1.443	1.29	0.31	0.68–1.91	<.0001
13. I feel relaxed around people with ADRD.	24	4.75	1.032	73	3.92	1.102	0.83	0.255	0.32–1.34	.0016
2. I am afraid of people with ADRD.	24	6.38	0.875	73	5.33	1.415	1.05	0.307	0.44–1.66	.0009
16. I feel frustrated because I do not know how to help people with ADRD.	24	5.42	1.349	73	4.07	1.653	1.35	0.373	0.61–2.09	.0005
4. I feel confident around people with ADRD.	23	4.474	1.453	71	3.82	1.199	0.92	0.303	0.32–1.53	.0031
5. I am comfortable touching people with ADRD.	24	5.38	0.97	73	4.38	1.088	1	0.25	0.50–1.49	.0001
1. It is rewarding to work with people who have ADRD.	24	6.08	1.316	73	4.01	1.338	2.07	0.314	1.44–2.69	<.0001
17. I cannot imagine caring for someone with ADRD.	24	6.21	1.318	73	5.07	1.456	1.14	0.335	0.48–1.81	.001
8. I am not very familiar with ADRD.	24	5.25	1.984	72	3.32	1.71	1.93	0.42	1.10–2.76	<.0001
Factor 'knowledge'										
7. Every person with ADRD has different needs.	24	6.71	0.55	73	5.95	1.257	0.76	0.265	0.24–1.29	.0049
15. People with ADRD can feel when others are kind to them.	24	6.25	0.676	73	5.95	1.257	0.3	0.269	-0.23 – 0.84	.2603
10. People with DRD like having familiar things nearby.	24	6.33	0.565	73	5.73	1.228	0.6	0.26	0.09–1.12	.0222
19. We can do a lot now to improve the lives of people with ADRD.	24	5.96	1.083	73	5.29	1.317	0.67	0.298	0.08–1.26	.0261
11. It is important to know the past history of people with ADRD.	24	6.42	0.83	73	5.12	1.224	1.3	0.269	0.76–1.83	<.0001
18. I admire the coping skills of people with ADRD.	24	4.88	2.007	73	5.21	1.384	-0.33	0.367	-1.05 – 0.40	.3768
12. It is possible to enjoy interacting with people with ADRD.	24	5.96	0.955	73	4.92	1.152	1.04	0.261	0.52–1.56	.0001
20. Difficult behaviours may be a form of communication for people with ADRD.	24	6.04	0.751	73	4.84	1.236	1.2	0.268	0.67–1.74	<.0001
3. People with ADRD can be creative.	24	6.08	1.06	73	5.12	1.178	0.96	0.271	0.42–1.49	.0006
14. I feel frustrated because I do not know how to help people with ADRD.	24	5.67	1.274	73	4.93	1.503	0.74	0.341	0.06–1.42	.033

6 | CONCLUSION

In conclusion, this study reveals the need for targeted educational interventions to improve dental students' attitudes towards people with dementia. Our proposed communication module, based on the results of the questionnaire and relevant literature, aims to address these areas and enhance students' learning outcomes. With a growing population of elderly and mentally altered patients in dental practice, addressing negative attitudes towards these patients during university courses is crucial. Our study highlights the need for consistent and comprehensive training in geriatric dentistry, particularly in the area of dementia care.

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CONFLICT OF INTEREST STATEMENT

No potential conflict of interest relevant to this article was reported.

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DATA AVAILABILITY STATEMENT

The data sets used and/or analysed during the current study are available from the corresponding author on reasonable request with a valid statistical analysis plan.

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REFERENCES

- Weintraub JA. What should oral health professionals know in 2040: executive summary. *J Dent Educ.* 2017;81(8):1024-1032.
- Andrews EA. The future of Interprofessional education and practice for dentists and dental education. *J Dent Educ.* 2017;81(8):eS186-eS192.
- Schwahn C, Frenzel S, Holtfreter B, et al. Effect of periodontal treatment on preclinical Alzheimer's disease—results of a trial emulsion approach. *Alzheimers Dement.* 2021;18:127-141.
- Gesundheit D. *Psychoreport 2019 – Entwicklung der psychischen Erkrankungen im Job Langzeitanalyse: 1997–2018.* 2019; <https://www.dak.de/dak/download/190725-dak-psychoreport-pdf-2125500.pdf>
- Steinauer JE, O'Sullivan P, Preskill F, ten Cate O, Teherani A. What makes “difficult patients” difficult for medical students? *Acad Med.* 2018;93(9):1359-1366.
- Dolce MC, Parker JL, Savageau JA, da Silva JD. Older adult patients' experience of care in a dental school clinic. *J Dent Educ.* 2019;83(9):1039-1046.
- Kite ME, Stockdale GD, Whitley BE, Johnson BT. Attitudes toward younger and older adults: an updated meta-analytic review. *J Soc Issues.* 2005;61(2):241-266.
- Jonas-Simpson C, Mitchell GJ, Carson J, Whyte C, Dupuis S, Gillies J. Phenomenological shifts for healthcare professionals after experiencing a research-based drama on living with dementia. *J Adv Nurs.* 2012;68(9):1944-1955.
- Zimmerman S, Williams CS, Reed PS, et al. Attitudes, stress, and satisfaction of staff who care for residents with dementia. *Gerontologist.* 2005;45(suppl_1):96-105.
- Lundquist TS, Ready RE. Young adult attitudes about Alzheimer's disease. *Am J Alzheimers Dis Other Demen.* 2008;23(3):267-273.
- Bundeszahnärztekammer. *Leitfaden der Bundeszahnärztekammer: Psychosomatik in der Zahn-, Mund- und Kieferheilkunde.* 2006; https://www.bzaek.de/fileadmin/PDFs/za/leitfaden_psychosomatik.pdf
- Bickel H. Demenzsyndrom und Alzheimer Krankheit: eine Schätzung des Krankenbestandes und der jährlichen Neuerkrankungen in Deutschland. *Das Gesundheitswesen.* 2000;62(4):211-218.
- Siewert U, Fendrich K, Doblhammer-Reiter G, Scholz RD, Schuff-Werner P, Hoffmann W. Health care consequences of demographic changes in Mecklenburg-West Pomerania: projected case numbers for age-related diseases up to the year 2020, based on the Study of Health in Pomerania (SHIP). *Dtsch Arztebl Int.* 2010;107(18):328-334.
- Hoefert H-W, Demmel H-J. *Kommunikation als Erfolgsfaktor im Krankenhaus.* Economica-Verlag; 2008.
- Murthy V, Rajaram S, Choudhury S, Sethuraman KR. Are we training enough of communication skills and patient psychology required in dental practice. *J Clin Diagn Res.* 2017;11(4):ZE01-ZE04.
- Bathla M, Chandna S, Mehta DS, Grover HS. Dentistry and psychiatry: it's time to bridge the gap. *Delhi Psychiatry J.* 2015;18(1):20-24.
- Tsolaki M, Papaliagkas V, Anogianakis G, et al. Consensus statement on dementia education and training in Europe. *J Nutr Health Aging.* 2010;14(2):131-135.
- O'Connor ML, McFadden SH. Development and psychometric validation of the dementia attitudes scale. *Int J Alzheimer's Dis.* 2010;2010(4):1-10.
- Peng A, Moor C, Schelling H. *Einstellungen zu Demenz. Übersetzung Und Validierung Eines Instruments Zur Messung von Einstellungen gegenüber Demenz Und Demenzkranken Menschen* 2012.
- Nyholt DR. A simple correction for multiple testing for single-nucleotide polymorphisms in linkage disequilibrium with each other. *Am J Hum Genet.* 2004;74(4):765-769.
- Valero-Mora PM. ggplot2: elegant graphics for data analysis. *J Stat Softw.* 2010;35:1-3.
- R Core Team. R: a language and environment for statistical computing. 2013.
- Isobe A, Izumi M, Akifusa S. Attitudes towards people with dementia: a cross-sectional study comparing dental hygiene students with registered dental hygienists. *Gerodontology.* 2019;36(1):45-54.
- Akifusa S, Izumi M, Isobe A. Dental hygiene students' attitudes and knowledge regarding people with dementia: a four-year prospective study. *J Dent Educ.* 2019;83(6):624-629.
- Schüerhoff V. *Der Übergang vom individuellen zum organisationalen Lernen. Vom individuellen zum organisationalen Lernen: Eine konstruktivistische Analyse.* DUV; 2006:141-194.
- Scerri A, Scerri C. Nursing students' knowledge and attitudes towards dementia—a questionnaire survey. *Nurse Educ Today.* 2013;33(9):962-968.
- Surr CA, Smith SJ, Crossland J, Robins J. Impact of a person-centred dementia care training programme on hospital staff attitudes, role efficacy and perceptions of caring for people with dementia: a repeated measures study. *Int J Nurs Stud.* 2016;53:144-151.
- Evripidou M, Charalambous A, Middleton N, Papastavrou E. Nurses' knowledge and attitudes about dementia care: systematic literature review. *Perspect Psychiatr Care.* 2019;55(1):48-60.
- Galvin JE, Kuntemeier B, al-Hammadi N, Germino J, Murphy-White M, McGillick J. “Dementia-friendly hospitals: care not crisis”: an educational program designed to improve the care of the hospitalized patient with dementia. *Alzheimer Dis Assoc Disord.* 2010;24(4):372-379.

30. Rice H, Howard R, Huntley J. Professional caregivers' knowledge, beliefs and attitudes about awareness in advanced dementia: a systematic review of qualitative studies. *Int Psychogeriatr*. 2019;31(11):1599-1609.
31. Gkioka M, Teichmann B, Moraitou D, Papagiannopoulos S, Tsolaki M. Effects of a person centered dementia training program in Greek hospital staff-implementation and evaluation. *Brain Sci*. 2020;10(12):976.
32. Patel I, Patel J, Jindal SV, Desai D, Desai S. Knowledge, awareness, and attitude towards dementia amongst medical undergraduate students: can a sensitization program help? *Ann Indian Acad Neurol*. 2021;24(5):754-758.
33. Annear MJ, Lea E, Lo A, Tierney L, Robinson A. Encountering aged care: a mixed methods investigation of medical students' clinical placement experiences. *BMC Geriatr*. 2016;16:38.
34. Adewuyi M, Morales K, Lindsey A. Impact of experiential dementia care learning on knowledge, skills and attitudes of nursing students: a systematic literature review. *Nurse Educ Pract*. 2022;62:103351.
35. Geddis-Regan A, Kerr K, Curl C. The impact of dementia on Oral health and dental care, part 2: approaching and planning treatment. *Prim Dent J*. 2020;9(2):31-37.
36. Kerr K, Curl C, Geddis-Regan A. The impact of dementia on oral health and dental care, part 1: setting the scene for dental care provision. *Prim Dent J*. 2020;9(2):24-30.
37. Furukawa K, Miyazawa I, Kaneko E, et al. Undergraduate geriatric education in foreign countries. *Nihon Ronen Igakkai Zasshi*. 2021;58(4):570-578.
38. Schaper S, Meyer-Rötz S, Bartels C, et al. Dental care of patients with dementia: a survey on practice equipment, training, and dental treatment. *Front Oral Health*. 2021;2:682139.

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